1975 Cadillac SHOP MANUAL

SUPPLEMENT

Curtis Reprs
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1975 CADILLAC
SHOP MANUAL SUPPLEMENT

Auto Parts 786-0644 Ast. 411

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended by Cadillac and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various Warnings, Cautions and Notes which should be carefully read in order to minimize the risk of personal injury to service personnel or the possibility that improper service methods will be followed which may damage the vehicle or render it unsafe. It is also important to understand that these Warnings, Cautions and Notes are not exhaustive. Cadillac could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Cadillac has not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Cadillac must first satisfy himself thoroughly that neither his safety nor vehicle safety will be jeopardized by the service method he selects.

THE CADILLAC CRAFTSMAN'S LEAGUE

CADILLAC CRAFTSMAN CODE

I HEREBY pledge myself in all my work on Cadillac cars, to be thorough and exact in diagnosing trouble; to recommend only that service which is to the best interest of the owner; to perform that work for which I am responsible in accordance with Cadillac standards to the best of my ability, and in all my dealings with Cadillac owners, to be courteous, honest, and ethical; and to do everything within my power to further the owner's satisfaction and promote his good will to Cadillac and to my dealer.

The Cadillac Craftsman's League is a program sponsored by Cadillac Motor Car Division for the benefit of authorized dealer's service departments. Participation in the League is open to Cadillac servicemen and partsmen, including department managers and apprentices. Enrollment information is available from the Zone Service Representative.

1975 CADILLAC SHOP MANUAL SUPPLEMENT

This manual is a supplement to the 1974 Cadillac Shop Manual. Service information contained in this manual covers only those features that are new for 1975 Cadillacs.

Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

Service Department
CADILLAC MOTOR CAR DIVISION
General Motors Corporation
Detroit, Michigan 48232

Printed in U.S.A. 8-74
Part No. 109 9842

1975 CADILLAC SHOP MANUAL SUPPLEMENT

GENERAL INFORMATION, MAINTENANCE AND LUBRICATION

Foreword

The following service information pertains only to 1975 Model Cadillac Cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

This Shop Manual has been prepared by the Service Department of the Cadillac Motor Car Division to aid in servicing 1975 model Cadillac automobiles. It is intended primarily for servicemen who are familiar with earlier model Cadillacs. It includes complete information on service procedures and specifications specific to 1975 Cadillac cars except body and Air Cushion Restraint System (ACRS) diagnosis and service information which is covered in separate manuals. Refer to the body service manual for servicing Cadillac body items and the Air Cushion Restraint System Service Manual for diagnosis and servicing the ACRS system. Removal and installation procedures of parts which are not part of the ACRS system, but which require different procedures due to the ACRS option are included in their respective sections of this manual.

Arrangement of the Manual

The title page contains a rapid reference section index with headings corresponding to the page tabs at the beginning of each section. A Table of Contents is provided at the beginning of each section that contains more than one major subject. A complete alphabetical index is located at the back of the manual.

The individual sections include theory of operation and diagnosis at the beginning of each section followed by service adjustments and replacement procedures. An illustrated list of special tools, a torque requirement chart, and specifications are provided as required at the end of each section.

Service information pertaining only to those features that are exclusive to the Eldorado is provided at the back of the individual sections in the manual. For Eldorado service procedures and recommendations not listed, refer to the forward part of the appropriate section, as these service procedures are similar to those on other 1975 Cadillac cars.

GENERAL INFORMATION

Vehicle Identification Number

Each 1975 Cadillac automobile or commercial chassis carries a 13 digit vehicle identification number used for license and insurance identification and in general reference to the automobile. The number is located on the forward lower edge of the windshield trim molding on the driver's side of the car where it is visible through the windshield. The 1975 Cadillac identification number is decoded as follows: (Fig. 0-1)

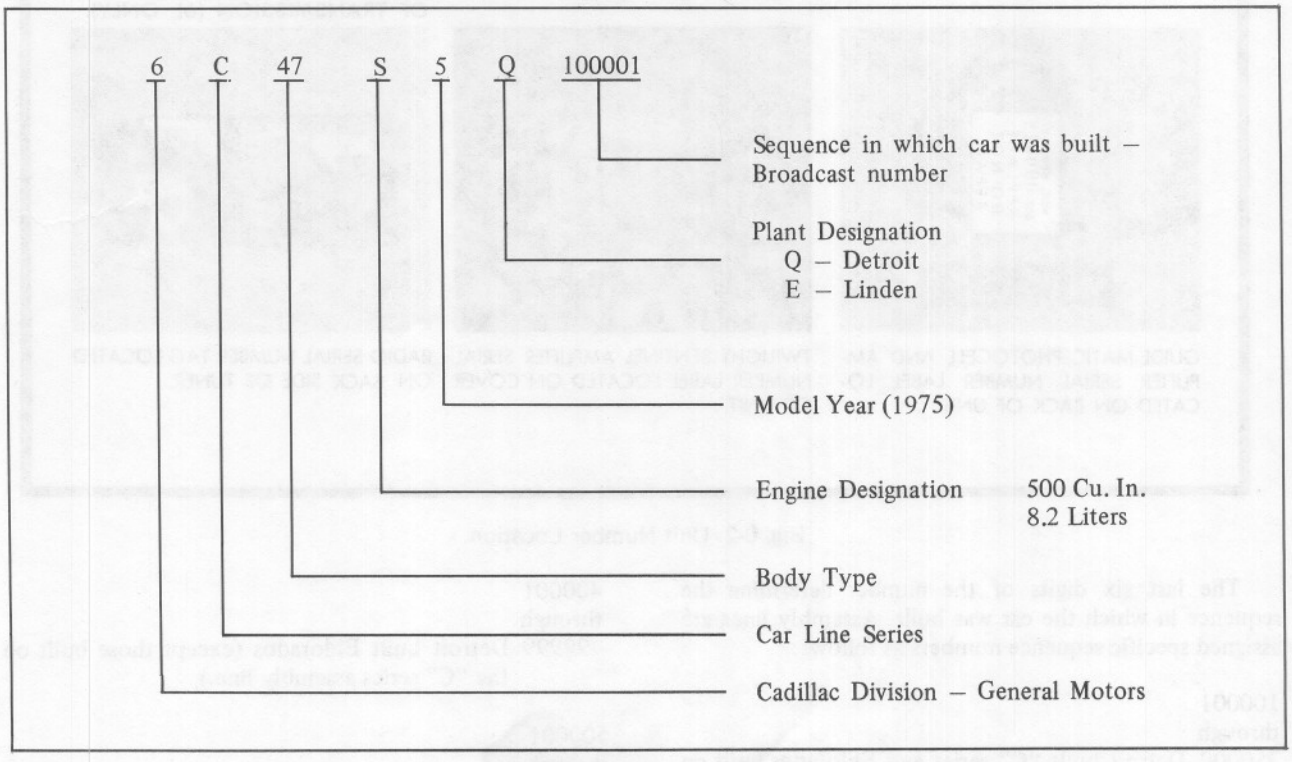
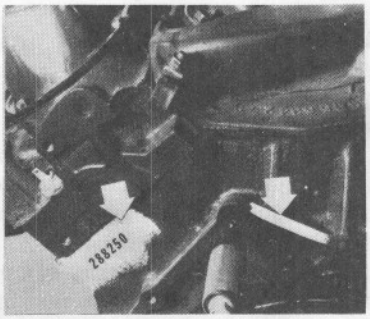
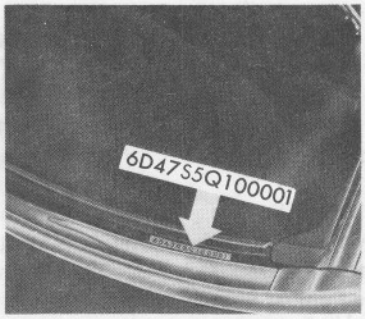


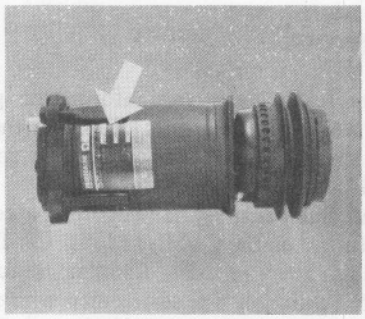
Fig. 0-1 Vehicle Identification Number



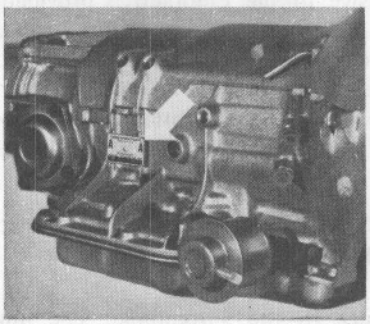
ENGINE UNIT NUMBER ON BLOCK BEHIND LEFT CYLINDER HEAD; V.I.N. DERIVATIVE ON BLOCK BEHIND INTAKE MANIFOLD



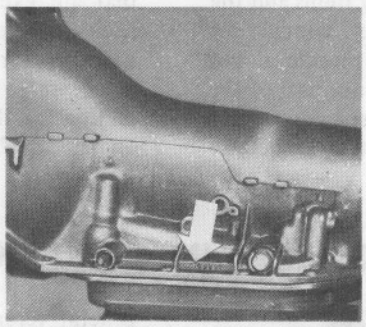
VEHICLE IDENTIFICATION NUMBER LOCATED ON PLATE RIVETED TO COWL BAR IN THE LOWER LEFT HAND CORNER OF THE WINDSHIELD.



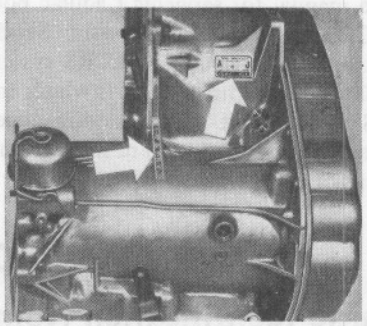
A/C COMPRESSOR SERIAL NUMBER LABEL LOCATED ON REAR PORTION OF COMPRESSOR HOUSING.



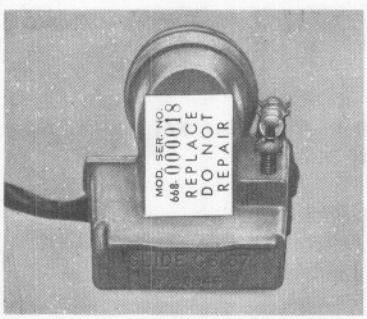
TURBO HYDRA-MATIC TRANSMISSION UNIT NUMBER PLATE LOCATED ON RIGHT SIDE OF CASE (EXCEPT 6L)



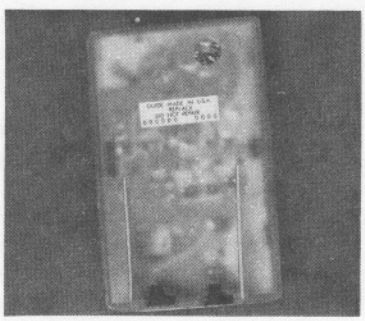
VEHICLE IDENTIFICATION NUMBER DERIVATIVE LOCATED ON LEFT SIDE OF TRANSMISSION CASE (EXCEPT 6L)



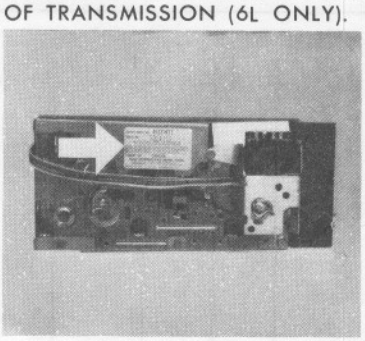
TURBO HYDRA-MATIC TRANSMISSION UNIT NUMBER PLATE LOCATED ON LEFT SIDE OF CONVERTER HOUSING. VEHICLE IDENTIFICATION NUMBER DERIVATIVE LOCATED ON VERTICAL SUPPORT PAD ON LEFT OF TRANSMISSION (6L ONLY).



GUIDE-MATIC PHOTOCELL AND AMPLIFIER SERIAL NUMBER LABEL LOCATED ON BACK OF UNIT.



TWILIGHT SENTINEL AMPLIFIER SERIAL NUMBER LABEL LOCATED ON COVER OF UNIT.



RADIO SERIAL NUMBER TAG LOCATED ON BACK SIDE OF TUNER.

Fig. 0-2 Unit Number Location

The last six digits of the number determine the sequence in which the car was built. Assembly lines are assigned specific sequence numbers as follows:

100001
through
350000 Detroit built "C" series and Eldorados built on the "C" series assembly line.

400001
through
499999 Detroit built Eldorados (except those built on the "C" series assembly line.)

500001
through
600000 Linden built DeVille series.

CAR LINE or SERIES NAME	VIN CAR LINE/ BODY TYPE DESIGNATOR	BODY TYPE
Brougham	B69	4-Door Sedan
Calais	C49	4-Door Hardtop Sedan
Calais	C47	2-Door Coupe
DeVille	D49	4-Door Hardtop Sedan
DeVille	D47	2-Door Coupe
Fleetwood 75	F23	4-Door Sedan
Fleetwood 75	F33	4-Door Limousine
Commercial Chassis	Z90	–
Eldorado	L47	2-Door Coupe
Eldorado	L67	2-Door Convertible

The series and model section (2nd, 3rd, and 4th digits) of the vehicle identification number may be further decoded using the above chart. These two numbers are interchangeable when referring to the automobile.

A nine-digit derivative of the vehicle identification number is applied to the engine and transmission at the locations shown in Fig. 0-2. This derivative is used for in-plant control of these assemblies and may be used by law enforcement or other officials to identify proper engine-chassis combinations. This number should contain the same numbers and letters as the vehicle identification number but in the condensed form shown in Fig. 0-3.

Identification Numbers

Location of identification numbers on various units are shown in Fig. 0-2. The identification number on the unit should always appear on product report forms sent to the Central Office such as PIR's, Claim Tags, Pre-Delivery Reports and, when required, on Warranty Claims. The 13 digit Vehicle Identification Number is necessary when reporting product information on any vehicle.

Body Identification Plate

A body identification plate, Fig. 0-4, is attached to the top surface of the shroud on the right side, under the hood, near the cowl. The name plate carries the style number, trim number, body number, and paint number in the areas indicated by ST, TR, BDY, and PNT.

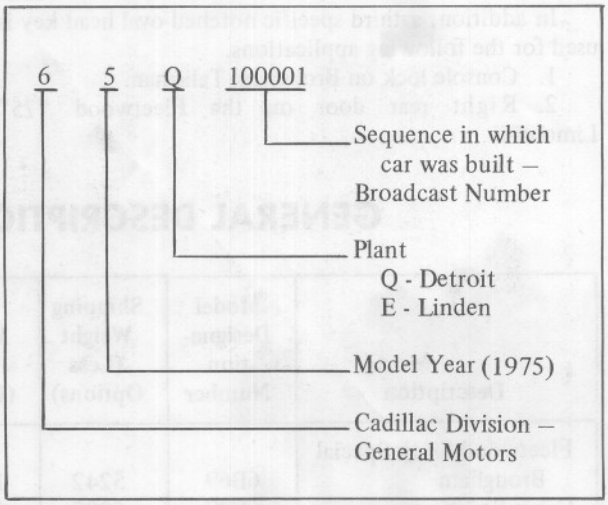


Fig. 0-3 Vehicle Identification Number Derivative

The first two digits of the style number (ST) indicate the model year while the remaining five digits indicate the model designation.

The numbers following the trim number (TR) indicate the interior trim color and seat type.

The body number (BDY) consists of three letters indicating the assembly plant and six digits indicating the sequence in which the body was built.

The first two digits of the paint number (PNT) indicate color of the body shell and chassis sheet metal; the letter indicates color of convertible and vinyl tops.

The number-letter code at the left below trim indicates date of assembly (month-01 through 12, week A through E).

Number-letter codes following the date of assembly indicate Fisher Body options and accessories installed at the factory.

Keys

All 1975 Cadillacs use TWO specific keys.

1. Square head – used for ignition switch ONLY.
2. Oval head – used for doors, glove box and trunk.

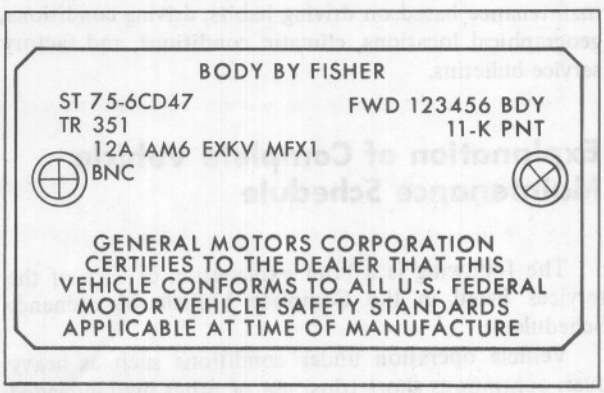


Fig. 0-4 Body Identification Plate

In addition, a third specific notched oval head key is used for the following applications.

1. Console lock on Brougham Talisman.
2. Right rear door on the Fleetwood "75" Limousine.

Towing Instructions

Refer to the General Motors 1975 Passenger Car and Light Truck Towing Instructions Manual.

GENERAL DESCRIPTION AND SPECIFICATIONS

Description	Model Designation Number	Shipping Weight (Less Options)	Wheelbase (Inches)	Overall Length (Inches)	Overall Height (Inches)	Maximum Width (Inches)	Tread Width	
							Front	Rear
Fleetwood Sixty Special Brougham	6B69	5242	133.0	233.7	55.3	79.8	63.3	63.3
Calais Sedan	6C49	5087	130.0	230.7	54.3	79.8	63.3	63.3
Calais Coupe	6C47	5003	130.0	230.7	53.8	79.8	63.3	63.3
Sedan de Ville	6D49	5146	130.0	230.7	54.3	79.8	63.3	63.3
Coupe de Ville	6D47	5049	130.0	230.7	53.8	79.8	63.3	63.3
Eldorado Coupe	6L47	5108	126.3	224.1	54.1	79.8	63.7	63.6
Eldorado Convertible	6L67	5167	126.3	224.1	54.5	79.8	63.7	63.6
Fleetwood Seventy-Five Sedan	6F23	5720	151.5	252.2	56.8	79.8	63.3	63.3
Fleetwood Seventy-Five Limousine	6F33	5862	151.5	252.2	56.6	79.8	63.3	63.3
Commercial Chassis	6Z90	—	157.5	—	—	—	63.3	65.0

1975 CADILLAC MAINTENANCE SCHEDULE

To retain the safety, dependability and emission control performance originally built into Cadillacs, it is essential that they receive periodic inspections, maintenance and service parts replacements.

This section contains a complete schedule of the maintenance required by the vehicles, except that additional maintenance requirements for optional Air Cushion Restraint Systems are listed in the ACRS manual.

These inspection and maintenance services are those which experience and testing have shown to be the most likely needed services at that particular mileage or time interval for an average owner. However, the Cadillac serviceman should also recommend additional items of maintenance based on driving habits, driving conditions, geographical locations, climatic conditions, and factory service bulletins.

Explanation of Complete Vehicle Maintenance Schedule

The following is a brief explanation of each of the services listed in the Complete Vehicle Maintenance Schedule.

Vehicle operation under conditions such as heavy dust, continuous short trips, use of other than unleaded fuels or pulling trailers, is not considered normal use and therefore more frequent maintenance will be required. Such additional maintenance requirements are included where applicable. A listing of recommended lubricants and fluids is included in this schedule.

(NOTE: The marked blocks indicate when services should be performed based on mileage intervals as shown in the "When To Perform Services" column.)

Symbols within the following explanations have the meanings listed below.

▲Also a Safety Service
*Also an Emission Control Service

Lube and General Maintenance

1. CHASSIS*—Lubricate idler arm (except Eldorado) steering linkage, ball joints, transmission shift linkage, hood latch, hood hinges, parking brake cable guides and linkage and fuel filler door hinges. Check ball joint wear indicators, (except Eldorado).

Lubricate all transmission linkage friction points each spring and fall with a grade 3 zinc oxide grease (except Eldorado). Lubricate Eldorado linkage with a grade 2 lithium soap grease.

Wipe off any accumulation of dirt or contamination from hood latch parts and apply lubricant to latch

COMPLETE VEHICLE MAINTENANCE SCHEDULE

Color Code: ☐ Lubrication and General Maintenance ▨ Safety ▩ Emission Control

When To Perform Service (Months or Miles, Whichever Occurs First)	Item No.	Services (For Details, See Numbered Paragraphs)	Mileage When Service Is To Be Performed (in thousands) 7.5	15.0	22.5	30.0	37.5	45.0
	1	Chassis Lubrication	X	X	X	X	X	X
Every 6 months or 7,500 miles	2	●★Fluid Levels Check	X	X	X	X	X	X
	3	★Engine Oil Change	X	X	X	X	X	X
Every 12 months	4	Air Conditioning System		X		X		X
At 1st 7,500 miles—then every 15,000	5	Tire Rotation	X		X		X	
At 1st oil change—then every 2nd	6	★Engine Oil Filter	X		X		X	
See Explanation	7	Rear Axle & Final Drive Fluid						
Every 12 months or 15,000 miles	8	★Cooling System		X		X		X
Every 30,000 miles	9	Final Drive Axle Boots & Output Shaft Seals				X		
See Explanation	10	Wheel Bearings						
Every 100,000 miles	11	★Automatic Transmission Fluid						
Every 6 months or 7,500 miles	12	Owner Safety Checks	X	X	X	X	X	X
	13	Tires & Wheels	X	X	X	X	X	X
	14	★Exhaust System	X	X	X	X	X	X
	15	★Engine Drive Belts	X	X	X	X	X	X
	16	Suspension & Steering	X	X	X	X	X	X
	17	Power Brakes & Steering	X	X	X	X	X	X
Every 7,500 miles	18	Disc Brakes	X	X	X	X	X	X
Every 12 months or 15,000 miles	19	Drum Brakes & Parking Brake		X		X		X
	20	Throttle Linkage		X		X		X
	21	Headlights		X		X		X
	22	Underbody		X		X		X
	23	Bumpers		X		X		X
At 1st 6 months or 7,500 miles—then at 18 months/22,500 miles intervals	24	Thermac Air Cleaner	X		X			X
	25	Carburetor Choke	X		X			X
	26	Timing and Engine Idle	X		X			X
	27	Carburetor Mounting	X		X			X
	28	EFE Valve, Switch and Hose	X		X			X
Every 12 months or 15,000 miles	29	EGR System		X		X		X
	30	Fuel Filter Replacement		X		X		X
	31	Thermo Vacuum Switch & Hoses		X		X		X
	32	PCV System		X		X		X
Every 22,500 miles	33	Carburetor Bowl Vent Valve			X			X
	34	Spark Plugs			X			X
Every 24 months or 30,000 miles	35	ECS System				X		
	36	Fuel Cap, Lines & Tank				X		
	37	AIR System				X		
Every 30,000 miles	38	Air Cleaner Element				X		
Every 18 months or 22,500 miles	39	Spark Plug Wire Check			X			X

striker and latch locking plate. Apply light engine oil to pivot points in release mechanism, as well as primary and secondary latch mechanism.

Lubricate hood hinges. Make hood hinge and latch mechanism functional check to assure the assembly is working correctly.

Apply a light coat of zinc oxide grease to all moving joints of the fuel filler door hinges each spring and fall.

Lubricate the spherical joints used on the front suspension system at the outer ends of the upper and lower control arms, and at the inner and outer steering linkage tie rod pivots with special front suspension lubricant.

At the time of an engine oil change, visually inspect all joint seals for any indication of damage, such as cuts, tears, ruptures, worn spots, etc. If a damaged seal is evident, the seal must be replaced and the joint lubricated. Special front suspension lubricant is recommended.

The lower spherical joint on C-cars is inspected for

wear visually as described in Section 3, Note 7B of the 1974 Shop Manual.

The procedure for replacing and repacking the upper and lower suspension arm spherical joint seals is described in Section 3 of the 1974 Shop Manual. The procedure for replacing and repacking inner and outer steering linkage tie rod pivots is described in Section 9 of the 1974 Shop Manual.

If a loose joint is found, replace the joint.

No lubrication is required at the generator; water pump; propeller shaft bearings; driven wheel bearings; upper and lower rear control arms; rear springs; shackles, or spring liners on Seventy-Five and Commercial Chassis; starter motor; speedometer cable; Automatic Level Control Compressor; or front or rear bumper Energy Absorbing Devices, as all of these are packed with sufficient lubricant at time of assembly.

The propeller shaft does not require maintenance on a regularly scheduled basis. Whenever the shaft is disconnected at the transmission, lubricate the outside diameter of the front propeller shaft yoke with Automatic Transmission Fluid, and the inside diameter with propeller shaft slip yoke lubricant, or an equivalent lubricant.

The moveable mechanical parts of the body are lubricated during production to insure proper and quiet operation. If additional lubrication is required, lubricants should be used according to the directions in Section 2 of the body service manual.

2. **FLUID LEVELS**–Check level of fluid in brake master cylinder ▲, power steering pump ▲, battery, engine*, axle, transmission* and windshield washer▲. Engine coolant should be checked for proper level and freeze protection to at least -40°F. or to the lowest temperature expected during the period of vehicle operation.* Proper engine coolant also provides corrosion protection.

The battery electrolyte level should be checked at every engine oil change. In warm weather, a check should be made at two-week intervals.

CAUTION: *Do not overfill battery or add any substance to fluid except colorless, odorless drinking water or distilled water.*

When replacing battery cables tighten screws to 70 inch-pounds torque.

CAUTION: *Over tightening terminal screws may strip threads in terminal or short out battery. Use only 3/8-16 x 1 coarse tread screws.*

Keep battery, cable terminals, and hold-down bracket clean. If necessary, clean with a solution of ammonia and water, or baking soda and water. Flush off with water.

CAUTION: *Never expose battery to open flame or electric spark – battery action generates hydrogen gas which is flammable and explosive. Do Not allow battery fluid to contact skin, eyes, fabrics, or painted surfaces – fluid is a sulfuric acid solution which could cause serious personal injury or property damage. Wear eye protection when working with battery. Remove rings, metal watchbands and other metal jewelry before jump starting or working around a battery, and be careful in using metal tools – if such metal should contact the positive battery terminal (or metal in contact with it) and any other metal on the car, a short circuit may occur which could cause personal injury.*

Any significant fluid loss in any of these systems or units could mean that a malfunction is developing and corrective action should be taken immediately. A low fluid level in the brake master cylinder front reservoir could also be an indicator that the disc brake pads need to be replaced.

An Engine Oil Change Interval and Viscosity Chart, and a Fluid Capacity Chart appear at the end of this section.

3. **ENGINE OIL***–Change each 6 months or 7,500 miles, whichever occurs first, or each 3 months or 3,000 miles when the vehicle is operated under the following conditions: (a) driving in dusty conditions, (b) trailer pulling, (c) extensive idling or (d) short-trip operation at freezing temperatures (with engine not thoroughly warmed-up).

The original factory fill oil will perform satisfactorily during the normal change interval specified on the Engine Oil Change Interval and Viscosity Chart located at the back of this section, because this oil meets the specifications for service "SE". The same chart should also be consulted for recommendations if additional oil should be necessary prior to the normal change interval.

The use of proper engine oil is the best assurance of continued reliability and performance from a Cadillac engine. Cadillac does not recommend oils by brand name, as assurance of oil quality is the responsibility of the refiner. Instead, the factory recommends oils that, according to their labels, are intended for service "SE". Cadillac Servicemen should assist owners in the selection of the proper oil that meets the above requirements, as well as the proper viscosity number for a particular area and season.

In areas where the temperature seldom drops below zero, most 10W or 10W-40 oils are satisfactory for easy staring of the engine. When the temperature is frequently near or below zero, a 5W-20 or 5W-30 oil is recommended.

(NOTE: 5W-20 oils are not recommended for sustained high speed driving. Non detergent and low quality oils are specifically NOT recommended for any type of service.)

Always maintain the correct oil level. Oil should be added only when the level reaches the "Add One Quart" mark on the dipstick. Do NOT add oil if oil level is above the "Add 1 Qt" line, or foaming may result. For an accurate check of oil level wait 10 to 15 minutes after shutting off engine to allow time for oil to drain back into pan. Always check engine oil level when engine is hot.

Engine oil is added by removing the oil filler cap on the right rocker arm cover.

The engine should be drained of oil only after it has been warmed to normal operating temperature. The

benefits of draining are minimized if the crankcase is drained when the engine is cold, as some suspended foreign matter will cling to the internal engine parts and will not drain with the slower moving colder oil.

The capacity is 4 quarts (5 quarts on Eldorado). Do not add more than 4 quarts except when changing oil filter in which case 5 quarts should be used (6 quarts on Eldorado). It is unnecessary to change the oil for the occasional unseasonably cold or warm day encountered during the fall or spring season.

(NOTE: The Eldorado engine has two oil pan drain plugs which must be opened when changing oil.)

4. **AIR CONDITIONING**–Check condition of air conditioning system hoses and refrigerant charge at sight glass. Replace hoses and/or refrigerant if need is indicated.

The 6 cylinder compressor uses 525 viscosity oil. It is important that only the type of oil recommended by the compressor manufacturer be used. Refer to Section 1 of the 1974 Shop Manual for lubricating recommendations.

5. **TIRES**–To equalize wear, rotate tires at 7,500 miles and every 15,000 thereafter. Adjust tire pressure as illustrated on tire placard on glove box door.

6. **ENGINE OIL FILTER***–Replace at the first oil change and every other oil change thereafter. The engine oil filter is of the spin-on, full-flow type.

The full-flow type oil filter filters 100% of the oil delivered by the oil pump. For this reason, it is very important that the recommended oil filter change intervals be followed.

The oil filter is mounted on the front right side of the engine. Access to the filter is gained from under the car. Replacement procedure is as follows:

1. Position car on hoist.
2. Unscrew filter from base and discard.
3. Wipe gasket area of base clean.
4. Place a light film of silicone on top of gasket and screw filter on stud of filter base by hand until gasket touches filter base. Then tighten element an additional 2/3 of a turn.
5. Add 1 quart of oil to engine crankcase.

(NOTE: If engine oil is changed in conjunction with oil filter replacement, add a total of 5 quarts of oil to engine crankcase (6 on Eldorado).)

6. Operate engine at fast idle and check for oil leaks at filter base.
7. After engine has run for 3 to 4 minutes, stop engine and check oil level.

7. **REAR AXLE AND FINAL DRIVE**–Change lubricant at first 15,000 miles on all controlled differentials. Change lubricant every 15,000 miles on all standard rear axles or final drives when using vehicle to pull a trailer, when performing service operations inside the differential or if replacement of the final drive is necessary.

Check the lubricant level only at the first inspection and add lubricant if necessary. The lubricant level should be within 1/2 inch of the lower edge of the filler hole. Each spring and fall, inspect for signs of external leakage and check lubricant level only if leakage is evident.

Either SAE 80W or SAE 80W-90 GL-5 multi-purpose type gear lubricant conforming to MIL-L-2105-B specifications or the controlled differential lubricant can be used for cars equipped with the standard differential. Cars equipped with the Controlled Differential should use only the special lubricant, Part Number 1050189, or its equivalent, to assure the satisfactory operation of this unit.

The recommended fluid for the final drive assembly is either SAE 80W or SAE 80W-90 GL-5 multi-purpose type gear lubricant conforming to MIL-L-2105-B specifications.

For vehicles normally operated in Canada, SAE 80 GL-5 gear lubricant is recommended.

When removing the filler plug, take extreme care not to allow any dirt to enter the filler hole.

8. **COOLING SYSTEM***–At 12-month or 15,000-mile intervals, wash radiator cap and filler neck with clean water, pressure test system and radiator cap for proper pressure holding capacity. Tighten hose clamps and inspect condition of all cooling and heater hoses. Replace hoses every 24 months or 30,000 miles or earlier if checked, swollen or otherwide deteriorated.

Also each 12 months or 15,000 miles, clean exterior of radiator core and air conditioning condenser. Light brushing and reverse air flow is usually a satisfactory cleaning method. Insects can usually be removed with a garden hose using light water pressure.

Engine coolant should be checked for proper level and for corrosion protection to at least -40°F and for freeze protection to the lowest temperature expected during the period of vehicle operation. Every 24 months or 30,000 miles, drain, flush, and refill the cooling system with ethylene glycol base coolant.

(NOTE: Supplemental inhibitors or additives claiming to provide increased cooling capability that have not been specifically approved by GM are not recommended for addition to the cooling system. These additives may be detrimental to the efficient operation of the system, and they represent an unnecessary operating expense.)

9. **ELDORADO FINAL DRIVE AXLE BOOTS & OUTPUT SHAFT SEALS**–Check for damaged, torn or leaking boots on drive axles and for leaking output shaft seal. Replace damaged parts as necessary. Refer to Section 3 of the 1974 Shop Manual.

10. **WHEEL BEARINGS**–Clean and repack front wheel bearings (rear on Eldorado) at the time of major axle or brake service with a #2 grade lithium high melting point wheel bearing grease free from any fillers or abrasives. Refer to Section 3 of the 1974 Shop Manual for repacking procedure.

11. **AUTOMATIC TRANSMISSION FLUID***–Under normal driving conditions, change the transmission fluid and service the sump filter every 100,000 miles. Under unusual conditions such as constant driving in heavy city traffic during hot weather, trailer pulling, etc., this service should be performed at 50,000-mile intervals. DEXRON® -II Automatic Transmission Fluid or fluid of equivalent quality is recommended exclusively for use in Cadillac automatic transmissions. It should be used both for adding and refilling.

DEXRON® -II fluid or its equivalent incorporates additives not used in regular fluid-additives that are essential for satisfactory transmission performance. Fluid of this quality is distributed by General Motors and by other oil marketers.

Fluid replacement procedure is as follows:

1. Remove dipstick from filler tube and insert a length of hose secured to a suction gun down the filler tube. Remove enough transmission fluid so that bottom pan will not overflow when removed.

2. Raise car and remove bottom pan. Empty pan and clean with solvent.

level. Add fluid, if necessary, to bring to proper level.

The oil intake system incorporates an oil filter in the transmission oil sump. The filter must be replaced after the first 100,000 miles only, or after a major transmission malfunction. The procedure for removing and installing the filter is described in Section 7, Note 6c of the 1974 Shop Manual.

The transmission dipstick and filler tube is located on the right side of the engine (left side on the Eldorado).

Fluid level should be checked at every engine oil change. Add fluid, if necessary until proper level is indicated on dipstick. Proper fluid level is based on operating temperature. See Figs. in Section 7 of the 1974 Shop Manual. At normal operating temperature, 1 pint of fluid will change the level from the low mark to the full mark on the dipstick.

When checking fluid level, first run engine at 800 rpm with shift lever in Park "P" position for 1-1/2 minutes to make certain converter is full. Reduce engine speed to slow idle, remove and wipe dipstick, then check fluid level. With the engine still running, add fluid through dipstick tube to bring fluid to proper level.

CAUTION: *Do not overfill, as foaming may occur when fluid heats up. If fluid level is too low, especially when cold, complete loss of drive may result after quick stops. Extremely low fluid levels will result in damage to the transmission.*

Safety Maintenance

12. **SAFETY CHECKS TO BE PERFORMED BY OWNER**—Listed below are the safety checks that should be made by the owner (items A through T). These checks should be made regularly during operation and at no greater interval than 6 months or 7,500 miles, whichever occurs first, and more often when the need is indicated. Any deficiencies should be brought to the attention of a dealer or another service outlet, as soon as possible, so the advice of a qualified mechanic is available regarding the need for repairs or replacements.

A. STEERING COLUMN LOCK—Check for proper operation by attempting to turn key to LOCK position in the various transmission gears with car stationary. Key should turn to LOCK position only when transmission control is in PARK. Key should be removable only in LOCK position.

B. PARKING BRAKE AND TRANSMISSION "PARK" MECHANISM—Check parking brake holding ability by parking on a fairly steep hill and restraining the vehicle with the parking brake only. Adjustment of the parking brake cable is necessary whenever the rear brakes have been disconnected. Need for parking brake adjustment is indicated if the hydraulic brake system operates with good reserve, but parking brake pedal travel is less than seven ratchet clicks or more than thirteen ratchet clicks

car, set the parking brake and firmly apply the foot brake. Do not depress accelerator pedal. Be prepared to turn off ignition switch immediately if engine should start.

C. STARTER SAFETY MECHANISM—Check starter safety mechanism by placing the transmission in each of the driving gears while attempting to start the engine. The starter should operate only in the Park ("P") or Neutral ("N") positions.

D. TRANSMISSION SHIFT INDICATOR—Check to be sure automatic transmission shift indicator accurately indicates the shift position selected.

E. STEERING—Be alert to any changes in steering action. The need for inspection or servicing may be indicated by "hard" steering, excessive free play or unusual sounds when turning or parking.

F. WHEEL ALIGNMENT AND BALANCE—In addition to abnormal tire wear, the need for wheel alignment service may be indicated by a pull to the right or left when driving on a straight and level road. The need for wheel balancing is usually indicated by a vibration of the steering wheel or seat while driving at normal highway speeds.

G. BRAKES—Be alert to illumination of the brake warning light or changes in braking action, such as repeated pulling to one side, unusual sounds when braking or increased brake pedal travel. Any of these could indicate the need for brake system inspection and/or service.

H. EXHAUST SYSTEM—Be alert to any change in the sound of the exhaust system or a smell of fumes which may indicate a leak. (See also item 14 in this schedule.)

I. WINDSHIELD WIPERS AND WASHERS—Check operation of wipers, as well as condition and alignment of wiper blades. Check amount and direction of fluid sprayed by washers during use.

J. DEFROSTERS—Check performance by moving controls to "DEF" and noting amount of air directed against the windshield.

K. REARVIEW MIRRORS AND SUN VISORS—Check that friction joints are properly adjusted to mirrors and sun visors stay in the selected position.

L. HORN–Blow the horn occasionally to be sure that it works at all button locations.

M. LAP AND SHOULDER BELTS–Check belts, buckles, adjustable latch plates, retractors, interlock and reminder systems, guide loops, clips and anchors for cuts, fraying or weakened portions, loose connections, damage, and for proper operation. Check to make certain that anchor mounting bolts are tight.

N. HEAD RESTRAINTS–Check that head restraints adjust properly in the up detent positions, and that no components are missing, damaged or loose.

O. SEAT BACK LATCHES–Check to see that seat back latches are holding by pulling forward on the top of each folding seat back (with doors closed).

P. LIGHTS AND BUZZERS–Check all instrument panel illuminating and warning lights, seat belt reminder light and buzzer, ignition key buzzer, interior lights, license plate lights, side marker lights, headlamps, parking lamps, tail lamps, brake lights, turn signals, backup lamps, and hazard warning flashers. Have someone observe operation of each exterior light while you activate the controls. The replacement numbers of instrument panel warning lights are listed in Section 12. Check headlamp aim every 12 months or 15,000 miles.

Q. GLASS–Check for broken, scratched, dirty or damaged glass on vehicle that could obscure vision or become an injury hazard.

R. DOOR LATCHES–Check for positive closing, latching and locking.

S. HOOD LATCHES–Check to make sure hood closes firmly by lifting on the hood after each closing. Check also for broken, damaged or missing parts which might prevent secure latching. Check to be certain that secondary latch hook is engaging properly when hood is popped open.

T. FLUID LEAKS–Check for fuel, water, oil or other fluid leaks by observing the ground beneath the vehicle after it has been parked for a while. (Water dripping from air conditioning system after use is normal.) If gasoline fumes or fluid are noticed at any time, the cause should be determined and corrected without delay because of the possibility of fire.

13. TIRES AND WHEELS–Check tires for excessive wear, nails, glass, cuts or other damage. Make certain wheels are not bent or cracked and wheel nuts are tight. Uneven or abnormal tire wear may indicate the need for alignment service. Tire inflation pressure should be checked by the owner at least monthly, or more often if daily visual inspection indicates the need. Refer to tire placard on glove box door for recommended pressures and information on tire tread wear. Check disc brake pads and condition of rotors while wheels are removed.

14. EXHAUST SYSTEM*–Check complete exhaust system and nearby body areas and trunk lid for broken, damaged, missing or mispositioned parts, open seams, holes, loose connections or other deterioration which could permit exhaust fumes to seep into the trunk or passenger compartment. Dust or water in the trunk may be an indication of a problem in one of these areas. Any problem should be corrected immediately. To help insure continued integrity, exhaust system pipes and resonators rearward of the muffler must be replaced whenever a new muffler is installed.

15. ENGINE DRIVE BELTS*–Check belts driving fan, AIR pump, generator, power steering pump and air conditioning compressor for cracks, fraying, wear and tension. Adjust or replace as necessary.

It is recommended that belts be replaced every 24 months or 30,000 miles, whichever occurs first.

16. SUSPENSION AND STEERING–Check for damaged, loose or missing parts, or parts showing visible signs of excessive wear or lack of lubrication in front and rear suspension and steering system. Questionable parts should be replaced.

17. BRAKES AND POWER STEERING–Check lines and hoses for proper attachment, leaks, cracks, chafing, deterioration, etc. Any questionable parts should be replaced or repaired immediately. When abrasion or wear is evident on lines or hoses, the cause must be corrected.

The steering gear is lubricated by the power steering fluid and requires no other lubricant. The fluid level in the pump reservoir should be checked every spring and fall after the engine is warm, and the reservoir kept filled with special power steering fluid, Part Number 1050017, or its equivalent. If the dipstick indicates that the fluid level is extremely low, the unit should be inspected for leaks and corrected immediately. When making a complete fluid change, always use special power steering fluid available from servicing parts warehouses. When topping off the fluid, if the special fluid is not available, DEXRON® -II Transmission Fluid or equivalent may be used. Refer to Section 9 of the 1974 Shop Manual for checking fluid level.

18. DISC BRAKES–Be alert for disc brake wear indicator sound. (See Section 5 of the 1974 Shop Manual for descriptive details). Check brake pads and condition of rotors while wheels are removed during tire rotation. (Note below regarding more frequent checks also applies to disc brakes.)

The brake fluid level of both sections of the master cylinder should be checked at every engine oil change and every time the brakes are serviced. The reservoir cover incorporates a diaphragm that provides a seal between the reservoir fluid and the atmosphere to prevent moisture absorption or dust contamination.

If either the front or rear brake reservoir is found to be low, the related hydraulic system should be checked for leaks. Then fill the reservoir with Super Heavy Duty Supreme II Brake Fluid, Part Number 5464832, or equivalent fluids conforming to SAE J-1703 specifications, to within 1/8 inch to 3/8 inch of the reservoir sealing surface.

Check travel of service brake pedal and the parking brake pedal every 7,500 miles. Excessive brake pedal travel is an indication of the air in the fluid or some other brake system malfunction.

Service brake pedal travel should not exceed 1-3/4 inch during normal brake pedal application of approximately 30 pounds force (2″ on Eldorado).

Refer to Section 5 of the 1974 Shop Manual for

adjustment procedures should pedal travel be found incorrect.

19. DRUM BRAKES AND PARKING BRAKE–Check drum brake linings and other internal brake components at each wheel (drums, wheel cylinders, etc.). Parking brake adjustment also should be checked for drag and mechanism lubricated at every chassis lubrication. Adjustment of the parking brake cable is necessary whenever the rear brakes have been disconnected. Need for parking brake adjustment is indicated if the hydraulic brake system operates with good reserve, but parking brake pedal travel is less than seven ratchet clicks or more than thirteen ratchet clicks under heavy foot pressure - all series.

(NOTE: More frequent checks should be made if driving conditions and habits result in frequent brake application.)

20. THROTTLE LINKAGE–Check for damaged or missing parts, interference or binding. Any deficiencies should be corrected.

21. HEADLIGHTS–Check for proper aim. Correct as necessary. More frequent checks should be made if oncoming motorists signal when you are already using your low beams, or if illumination of the area ahead seems inadequate. See Section 12.

22. UNDERBODY–In geographic areas using a heavy concentration of road salt or other corrosive materials for snow removal or road dust control, flush and inspect the complete under side of the car at least once each year, preferably after a winter exposure. Particular attention should be given to cleaning out underbody members where dirt and other foreign materials may have collected.

(NOTE: Undercoating should not be applied to any moving or rotating part. It should be kept off bumper energy absorbers, steering damper (Eldorado), shock absorbers, air conditioner fittings, body drainholes, exhaust system, propeller shaft, component vents and air filters. On cars equipped with Automatic Level Control, particular care should be taken not to undercoat any fittings, lines, or system components.)

23. BUMPERS–Check the front and rear bumper systems at 12-month/15,000-mile intervals to be sure the impact protection and clearance originally designed into these systems remain in a state of full readiness. It also should be checked whenever there is obvious bumper misalignment, or whenever the vehicle has been involved in a significant collision in which the bumper was struck, even when slight or no damage to the bumper system can be seen.

Emission Control Maintenance

The Federal Clean Air Act stipulates that it is unlawful for any person to remove or render inoperative any device or element of design on a motor vehicle in compliance with regulations. A futher provision stipulates that "the manufacturer shall furnish with each new Motor vehicle" . . . "written instructions for the maintenance and use of the vehicle or engine by the ultimate purchaser as may be reasonable and necessary to assure the proper functioning of emission control devices and systems."

24. THERMOSTATICALLY CONTROLLED AIR CLEANER–Inspect installation to make certain that all hoses and ducts are connected and correctly installed. Operational function should be checked as described in Section 6 of the 1974 Shop Manual.

25. CARBURETOR CHOKE–Check choke mechanism for free operation. Any binding condition which may have developed due to petroleum gum formation on the choke shaft or from damage should be corrected. Choke shafts can usually be cleaned without disassembly by using X-66 Carburetor Conditioner or equivalent. The wire and hose must be in good condition, correctly installed and fit tightly.

26. TIMING AND ENGINE IDLE–Ignition timing and engine idle should be adjusted accurately following the specifications and procedures on the label under the hood at 22,500 miles of operation, then at 22,500 mile intervals. Adjustments must be made with test equipment known to be accurate.

The Cadillac High Energy Ignition Unit is permanently lubricated and requires no periodic oiling. However, in the event the HEI is disassembled and the shaft is removed, the wick in the oil reservoir should be moistened with light weight engine oil.

Inspect the interior and exterior of the HEI cap, and rotor for cracks, carbon tracking, and terminal corrosion. Clean or replace as necessary at 24-month/30,000-mile intervals to prevent misfiring and/or deterioration.

Proper functioning of the carburetor is particularly essential to control of emissions. Correct mixtures for emission compliance and idle quality have been preset by Cadillac. Plastic idle mixture limiters have been installed on the idle mixture screws to discourage unauthorized adjustment. These idle limiters are not to be removed unless some major carburetor repair or replacement which affects the idle screw adjustment has been necessary.

At 24 month or 30,000 mile intervals or in case of a major carburetor overhaul, or when poor idle quality exists the mechanical method (lean drop) should be used to adjust idle mixture.

27. CARBURETOR MOUNTING–Tighten carburetor attaching screws to 15 foot pounds to compensate for compression of gasket at first 6 months or 7,500 miles of vehicle operation and at 18 months or 22,500 miles. Tighten at 18 month or 22,500 mile intervals thereafter.

28. EARLY FUEL EVAPORATION VALVE–Check EFE valve for operation at the first to 6 months or 7,500 miles and every 18 months or 22,500 miles thereafter. Check by disconnecting EFE hose, applying vacuum and noting operation of valve. Check hose and switch. Apply manifold heat valve lubricant, Part Number 1050422 or equivalent, if valve does not operate freely.

29. EXHAUST GAS RECIRCULATION SYSTEM (EGR)–At 12 month/15,000 mile intervals remove, inspect and if deposits exist, clean the EGR valve. Inspect the EGR passages in the inlet manifold and clean as required. A damaged EGR valve must be repaired or replaced.

30 **FUEL FILTER**–Replace filter at 12-month/15,000-mile intervals. Filter is located in carburetor.

31 **THERMAL VACUUM SWITCH AND HOSES**–The thermal vacuum switch should be tested every 12 months or 15,000 miles. Vacuum control hoses mut be in good condition, correctly installed and fit tightly.

32 **POSITIVE CRANKCASE VENTILATION SYSTEM (PCV)**–Clean the filter and check the PCV system for satisfactory operation at 12-month or 15,000-mile intervals using a tester. Replace the PCV valve at 24-month or 30,000-mile intervals and blow out PCV valve hose with compressed air. The PCV valve should be replaced at 12-month or 15,000-mile intervals when the vehicle is used in operations involving heavy dust, extensive idling, trailer pulling, and short trip use at freezing temperatures where engine does not become thoroughly warmed-up.

Cleaning of the crankcase ventilating breather is important in order to provide proper crankcase breathing. The breather is located on the left rocker arm cover. The filtering material in the unit must be cleaned with solvent at every oil filter change. Do not oil the filtering element.

33 **CARBURETOR BOWL VENT VALVE**–Check valve for correct operation. Clean valve and seat assembly with a gum cutting solvent every 22,500 miles. Adjust to specification as described in Section 6.

34 **SPARK PLUBS**–Replace every 22,500 miles with R45NSX spark plugs and tighten to 25 foot pounds. When misfiring occurs before 22,500 miles, spark plugs in good condition can be cleaned, gapped to .060 inch and reused.

35 **EVAPORATION CONTROL SYSTEM (ECS)**–Check all fuel and vapor lines and hoses for proper connections and correct routing as well as condition.

Check canister for cracks or damage when replacing the canister filter. Replace filter every 24 months or 30,000 miles. Replace damaged or deteriorated parts as necessary.

36 **FUEL CAP, FUEL LINES AND FUEL TANK**–Inspect the fuel tank, cap and lines for damage which could cause leakage. Inspect fuel cap for correct sealing ability and indications of physical damage. Replace any damaged or malfunctioning parts.

37 **AIR INJECTION REACTOR (AIR) SYSTEM HOSES AND CONNECTIONS**–Check AIR system hoses and fittings for loose connections and deterioration. Test diverter valve by quickly depressing and releasing throttle and holding hand under diverter valve exhaust. If exhausted air can be felt during engine deceleration, valve is operating properly. Inoperative diverter valves should be replaced.

38 **AIR CLEANER ELEMENT**–Replace the engine air cleaner element under normal operating conditions every 30,000 miles. Operation of vehicle in dusty areas will necessitate more frequent element replacement. A visual inspection of the element is recommended periodically to make certain that it is properly seated and that there is no indication of dust leakage. If dirt or damage is indicated at time of visual inspection, the element should be replaced. To replace element, proceed as follows:

1. Remove cover from carburetor air cleaner.
2. Remove element and discard.
3. Wipe all dirt from inside air cleaner cover.
4. Remove base, wipe clean and reinstall.
5. Install a new element on air cleaner base, making certain that it is properly seated and replace air cleaner cover.

CAUTION: *Do not operate the engine without the air cleaner unless temporary removal is necessary during repair or maintenance of the vehicle. When the air cleaner is removed, backfiring can cause fire in the engine compartment.*

39 **SPARK PLUG WIRES**–Inspect spark plug wires for evidence of checking, burning or cracking of exterior insulation and tight fit at HEI cap and spark plugs. Exterior of wires should be cleaned; any evidence of corrosion on end terminals removed and wire replaced if deteriorated. Check should be made after first 24 months or 30,000 miles and at every 12 month/15,000 miles thereafter.

RECOMMENDED FLUIDS & LUBRICANTS

USAGE	FLUID/LUBRICANT
Power steering system and pump reservoir	GM power steering fluid–Part No. 1050017 or equivalent. DEXRON® -II or equivalent automatic transmission fluid may be used to top off reservoir
Differential–standard	SAE 80W or SAE 80W-90 GL-5 gear lubricant (SAE-80 GL5 in Canada)
Differential–Controlled	Special Lubricant; Part Number 1050189 or equivalent
Brake system and master cyl.	Delco Supreme 11 or DOT-3 fluids or equivalent
Hood latch assembly a. Pivots and spring anchor b. Release pawl	Engine oil Chassis grease
Hood hinges	Engine oil
Automatic transmission shift linkage	Engine oil
Chassis lubrication	Chassis grease meeting GM 6031-M
Automatic transmission	DEXRON® - II or equivalent automatic transmission fluid

RECOMMENDED FLUIDS & LUBRICANTS CONTINUED

Parking brake cables	Chassis grease
Front wheel bearings (rear on Eldorado)	#2 Grade Lithium high melting point wheel bearing grease Part No. 1050679 or equivalent
Body door hinge pins, fuel door hinge, rear compartment lid hinges	Engine oil
Convertible door-to-lock wedge plates	Stick-type lubricant
Windshield washer solvent	GM Optikleen washer solvent Part No. 1051515 or equivalent
Battery	Colorless, odorless, drinking water or distilled water
Engine coolant	50-50 mixture of water and a high quality Ethylene Glycol base type anti-freeze conforming to GM Spec. 1899-M
Propeller shaft front slip yoke	Outside—transmission fluid inside and between transmission oil seal lips—synthetic oil seal lubricant, Part Number 1050169, or its equivalent
Engine fuel	Only unleaded gasoline having a research octane number of 91 or higher (Cost of Living Council method - 87 octane quality or higher)
Air conditioning system lubricant	525 viscosity refrigeration oil
Refrigerant	Refrigerant "12"
EFE valve	Manifold heat valve lubricant, Part Number 1050422 or equivalent.

ENGINE OIL CHANGE INTERVAL AND VISCOSITY CHART

ENGINE OIL RECOMMENDATION

Use only high quality oils intended for service "SE" The chart below will serve as a guide for selecting proper oil viscosity. Change oil every 6 months never to exceed 7,500 miles.

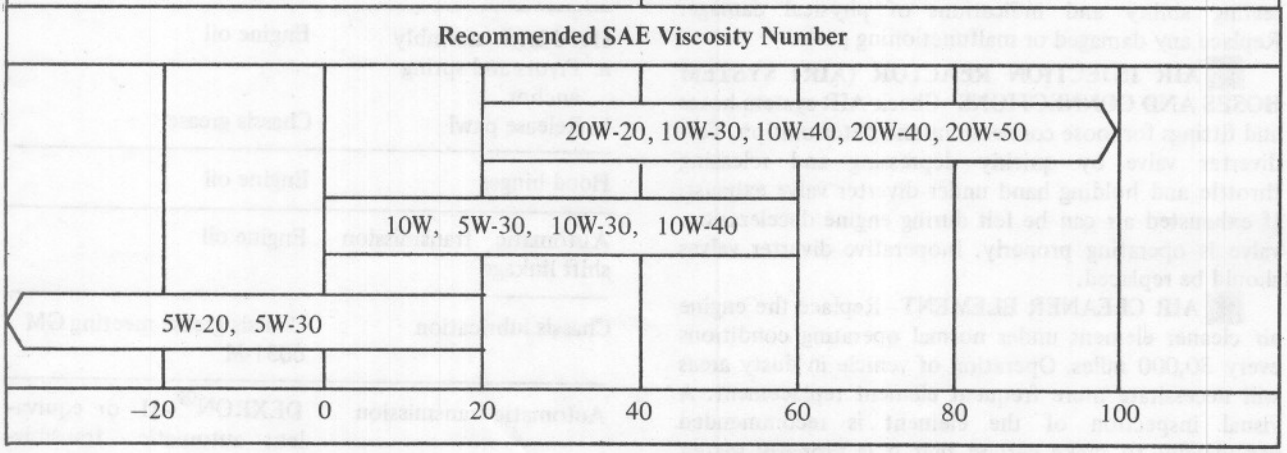
Change oil each 3 months or 3,000 miles, whichever occurs first, under the following conditions: Driving in dusty areas, trailer towing, extensive idling, short trip operation (engine not thoroughly warmed up) or sustaines high temperatures.

OIL VISCOSITY PRECAUTIONS

SAE 5W-20 oils are not recommended for sustained high-speed driving.

SAE 30 oils may be used at temperatures above 40°F.

SAE 5W-30 viscosity oils recommended for vehicles normally operated in Canada.



Temperature range anticipated before next oil change, °F.

FLUID CAPACITIES

All Series Unless Otherwise Noted	U.S. Measure	Imperial Measure	Metric Measure
Engine Oil			
All (Except Eldorado)	4 Quarts	3-1/3 Quarts	3.8 Liters
Eldorado Only	5 Quarts	4-1/6 Quarts	4.7 Liters
When Filter is Changed			
All (Except Eldorado)	5 Quarts	4-1/6 Quarts	4.7 Liters
Eldorado Only	6 Quarts	5 Quarts	5.7 Liters
Cooling System			
All (Except Eldorado)	23.0 Quarts	18-3/4 Quarts	21.8 Liters
Eldorado	25.8 Quarts	20 Quarts	24.4 Liters
Air Conditioner - Refrigerant 12	3-3/4 Pounds	3-3/4 Pounds	1.7 Kilograms
75 Series Only	5 Pounds	5 Pounds	2.3 Kilograms
Air Conditioner Compressor Oil -			
525 Viscosity	10-1/2 Fluid Ounces	8-3/4 Ounces	297.7 Grams
75 Series Only	13-1/2 Fluid Ounces	11-1/4 Ounces	382.7 Grams
Rear Axle (Except Eldorado)	5 Pints	4-1/2 Pints	2.4 Liters
Final Drive (Eldorado Only)	4 Pints	3-1/3 Pints	1.9 Liters
Gasoline Tank (All Series)	27.5 Gallons (Approx.)	23 Gallons (Approx.)	104.1 Liters (Approx.)
Turbo-Hydra-matic Transmission (Except 693)			
Dry	12 Quarts, 1 Pint	10-1/3 Quarts	11.8 Liters
Pan and Filter Removed	4 Quarts	3-1/3 Quarts	3.8 Liters
(Eldorado Only)			
Dry	13 Quarts	10-5/6 Quarts	12.3 Liters
Pan and Filter Removed	5 Quarts	4-1/6 Quarts	4.7 Liters

FLUID CAPACITIES

All Series Unless Otherwise Noted	U.S. Measure	Imperial Measure	Metric Measure
Engine Oil			
All (Except Eldorado)	4 Quarts	3-1/2 Quarts	3.3 Liters
Eldorado Only	5 Quarts	4-1/6 Quarts	4.7 Liters
When Filter is Changed,			
All (Except Eldorado)	5 Quarts	4-1/6 Quarts	4.7 Liters
Eldorado Only	6 Quarts	5 Quarts	5.7 Liters
Cooling System			
All (Except Eldorado)	25.0 Quarts	18-3/4 Quarts	23.3 Liters
Eldorado	25.8 Quarts	20 Quarts	24.4 Liters
Air Conditioner - Refrigerant 12	3-3/4 Pounds	3-3/4 Pounds	1.7 Kilograms
75 Series Only	5 Pounds	5 Pound.	2.3 Kilograms
Air Conditioner Compressor Oil -			
525 Viscosity	10-1/2 Fluid Ounces	8-3/4 Ounces	297.7 Grams
75 Series Only	12-1/2 Fluid Ounces	11-1/4 Ounces	383.7 Grams
Rear Axle (Except Eldorado)	5 Pints	4-1/2 Pints	2.4 Liters
Final Drive (Eldorado Only)	4 Pints	3-1/3 Pints	1.9 Liters
Gasoline Tank (All Series)	27.5 Gallons (Approx.)	23 Gallons (Approx.)	104.1 Liters (Approx.)
Turbo Hydra-matic Transmission			
(Except c/93)			
Dry	12 Quarts, 1 Pint	10-1/2 Quarts	11.8 Liters
Pan and Filter Removed	4 Quarts	3-1/3 Quarts	3.8 Liters
(Eldorado Only)			
Dry	13 Quarts	10-5/6 Quarts	12.3 Liters
Pan and Filter Removed	5 Quarts	4-1/6 Quarts	4.7 Liters

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WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM, DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF ANY PORTION OF THE AIR CONDITIONING SYSTEM WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF ANY COMPONENTS OF THE AIR CUSHION RESTRAINT SYSTEM UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS.

A.C.R.S. DISCONNECTION PROCEDURE

Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

GENERAL DESCRIPTION

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

1. 1975 A/C System Changes

The following changes affect the operation and diagnosis of the 1975 Air Conditioning System.

a. "Hi" blower speed is no longer available in the heater mode when the control head is in the "Auto" position. "Hi" blower is not required due to the improved design of the heater case.

b. The vacuum storage tank is used only on cars with the Trailer Towing option (option YM7).

c. A new programmer, designated MKII is used on all cars.

d. A modified VIR assembly, designated "EEVIR" is incorporated on all cars.

e. The 1975 condenser is 3-1/2" wider than previous designs.

f. Multiple blower speeds and heater mode available in "Economy" position.

g. The connection of the high and low pressure lines at the rear of the compressor is accomplished with a manifold rather than with individual connectors as in previous years.

2. Diagnosis of A/C Problems

Due to the detail changes outlined above, several system responses are changed which affect diagnosis. Only the changes are listed in this note.

AUTOMATIC TEMPERATURE CONTROL FUNCTIONAL TEST	
CONTROL SETTING	**SYSTEM SHOULD OPERATE AS FOLLOWS**
"DEF" DIAL @ 85°	Air should be delivered out of defroster outlets at a fixed high blower speed. Some floor bleed out heater.
"BI-LEVEL" DIAL @ 75°	Air should be delivered from both the A/C and heater outlets at a reduced blower speed. Only a small portion of air will come out the defroster outlet.
"HI" DIAL @ 65°	Air should be delivered out the A/C outlets at a fixed high blower speed and cool to cold temperature. The recirculating air door should open (blower noise increases). Door movement will be slow because of vacuum delay plug.
"AUTO" DIAL @ 85°	Blower speeds should drop (Hi-M_3-M_2-M_1- etc.). Recirc air door should close (noise level will drop). Discharge air temperature should increase. Depending on the temperature in the work area, the air delivery mode should change from the A/C outlets to the heater outlets.
"LO" DIAL @ 85°	Air should be delivered at a fixed low blower speed.
"ECONOMY" DIAL @ 65°	Blower speeds should increase (M_1-M_2-M_3- etc.) Depending on the temperature in the work area, the air delivery mode should change from the heater outlets to both heater and A/C outlets of the A/C outlets only. The A/C compressor should not operate.
"OFF" DIAL @ 65°	Air should be discharged out the heater outlet at a fixed low blower speed. No A/C compressor operation.

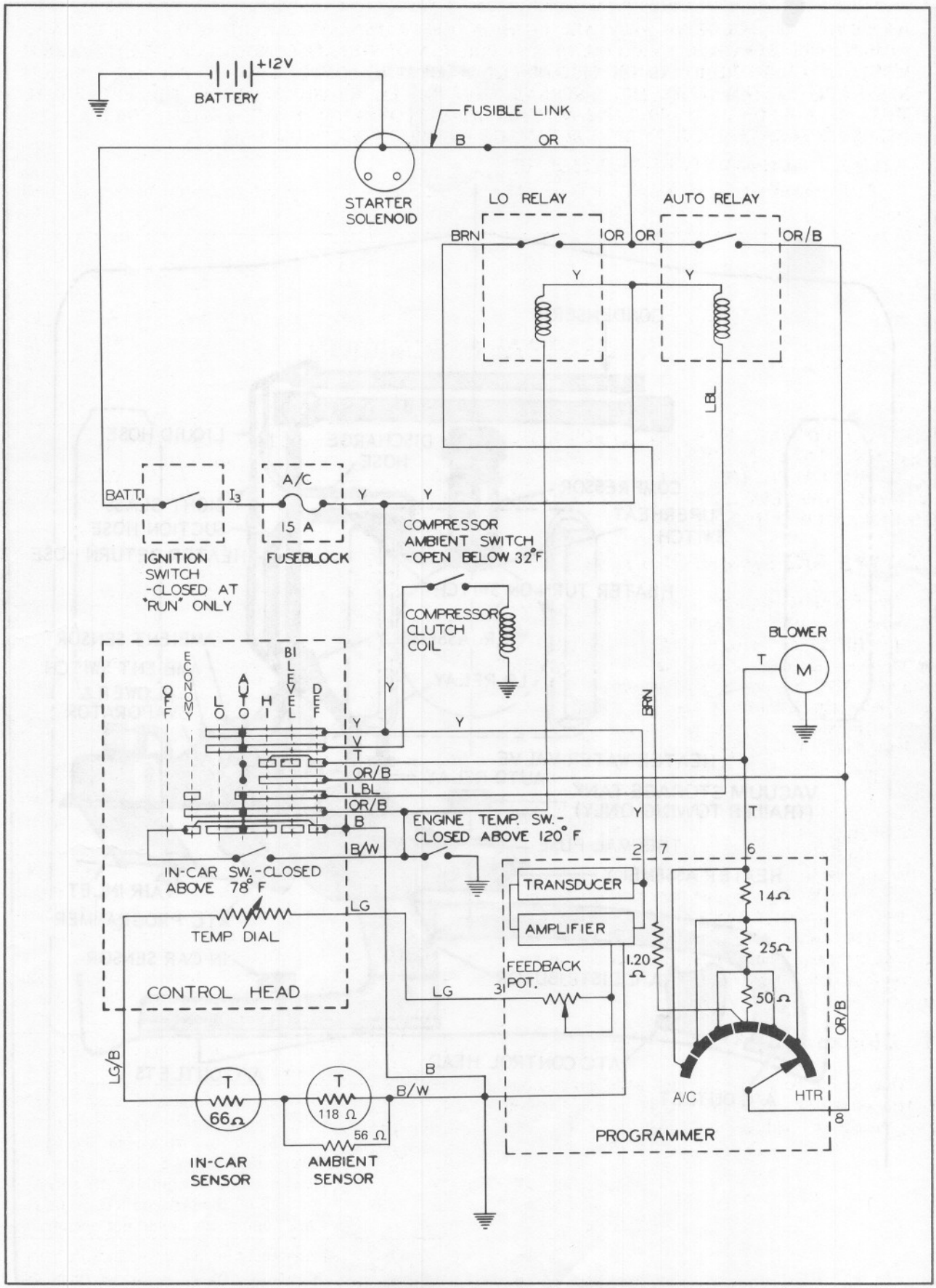


Fig. 1-1 Blower Control Circuit

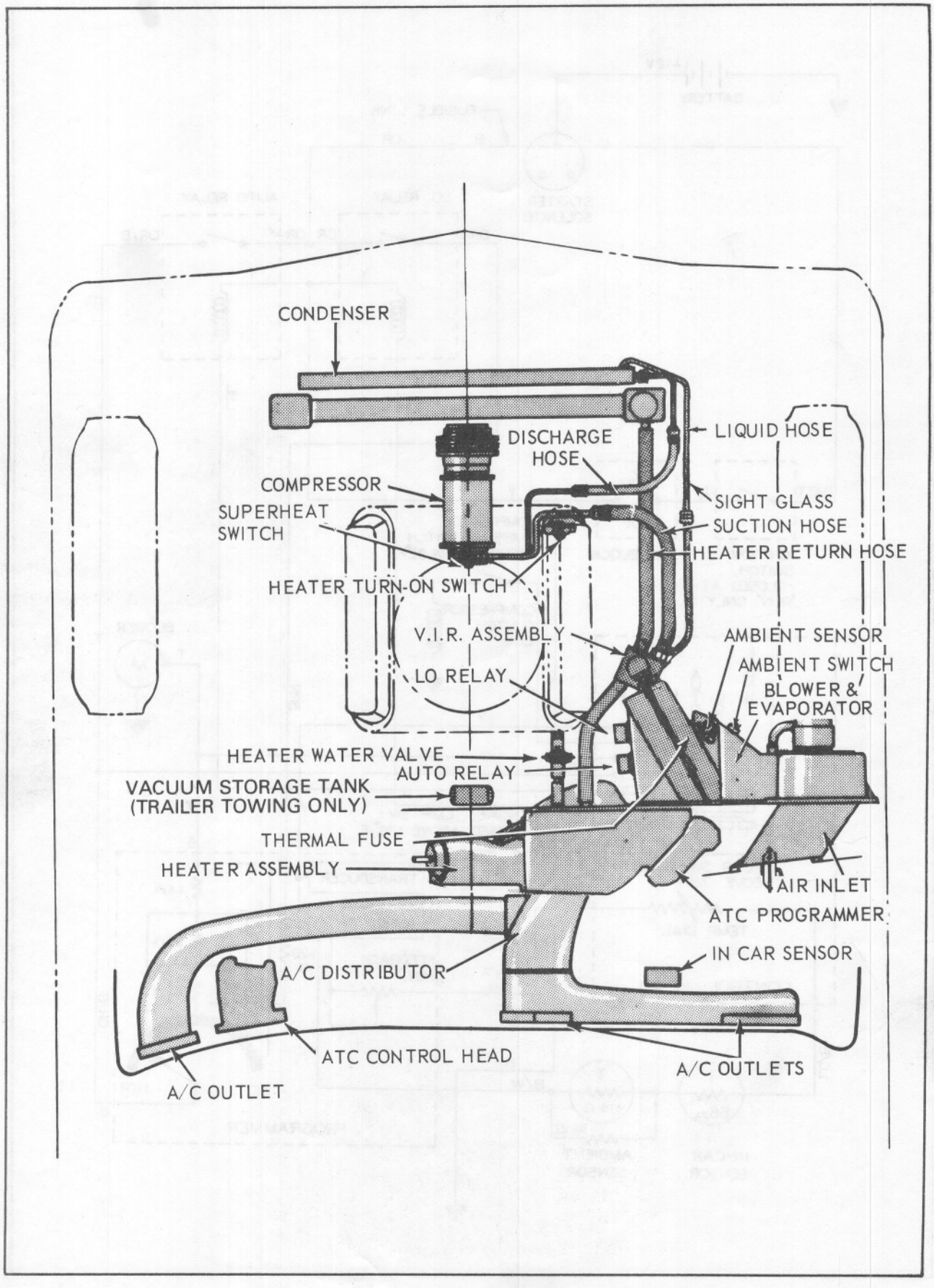


Fig. 1-2 Location of Air Conditioner Components

NO BLOWER IN OFF OR LO SETTINGS

1. Disconnect at "Low" blower relay.
2. "Lo" blower relay inoperative.
3. Open low speed resistor on programmer.
4. Backed-out terminal or poor connection at six-way connector (located near programmer) or at programmer. Trace lower blower circuit using electrical wiring diagram, Fig. 1-1.
5. Open in low blower circuit wiring. Refer to wiring diagram, Fig. 1-15.

NO HEATER TURN-ON IN COLD WEATHER EXCEPT IN "DEF"

1. Electrical disconnect at heater turn-on switch (located at front of R.H. cylinder head).
2. Heater turn-on switch inoperative (will not close). Check by grounding switch feed wire.
3. If problem persists, refer to electrical circuit diagrams and check wiring continuity.

(NOTE: If problem does not occur in shop, it is probable that the system is turned on by the in-car sensor. Disconnect control head electrical connector to disarm the in-car switch. If the blower turns off (with the engine warmed up), ground the heater turn-on switch feed wire. If the blower now turns on (in low blower speed), the heater switch is probably defective.

A/C DELAYED IN HOT WEATHER UNTIL ENGINE WARMS UP (UNLESS CONTROL LEVER IS IN "DEF"

1. Inoperative (open) in-car switch.
2. Open in control head wiring harness (in-car switch circuit).
3. If problem persists, check wiring continuity in the in-car switch circuit. Refer to the wiring diagram, Fig. 1-1.

3. ATC Tester J-23678

Due to its slightly different performance characteristics, the instructions provided with Tester J-23678 have been revised for use on the MKII ATC Programmer. The new instructions are designated J-23678-50.

Be sure to use the correct set of instructions for programmer being worked on.

4. Identification of ATC Programmers

To properly identify a MKII programmer look for the identification mark shown in Fig. 1-3. Positive identification can be made by comparing the internal components of the programmer in question with that shown in Fig. 1-17. Fig. 1-17 represents a MKII ATC programmer. Similar pictures in previous shop manuals show the earlier design.

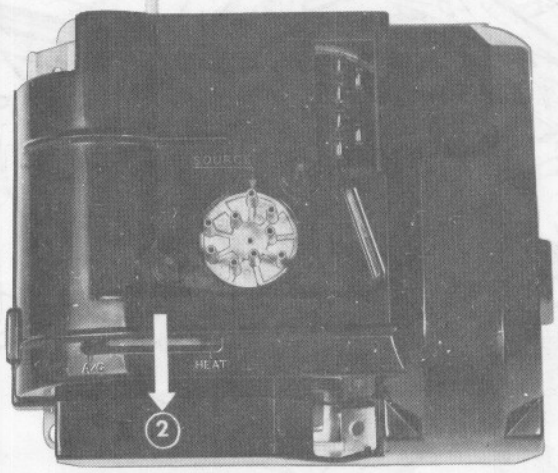


Fig. 1-3 MK II ATC Programmer

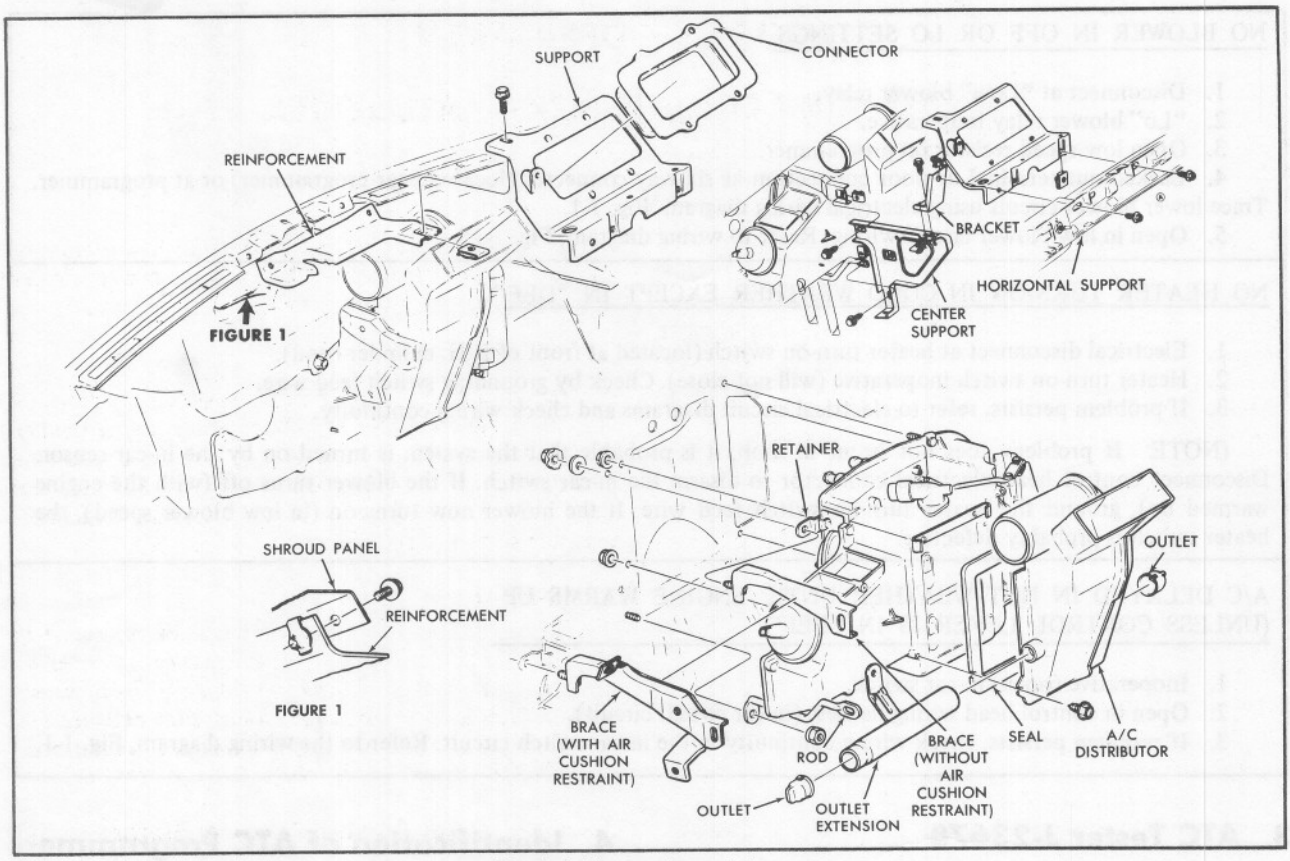


Fig. 1-4 Heater Assembly

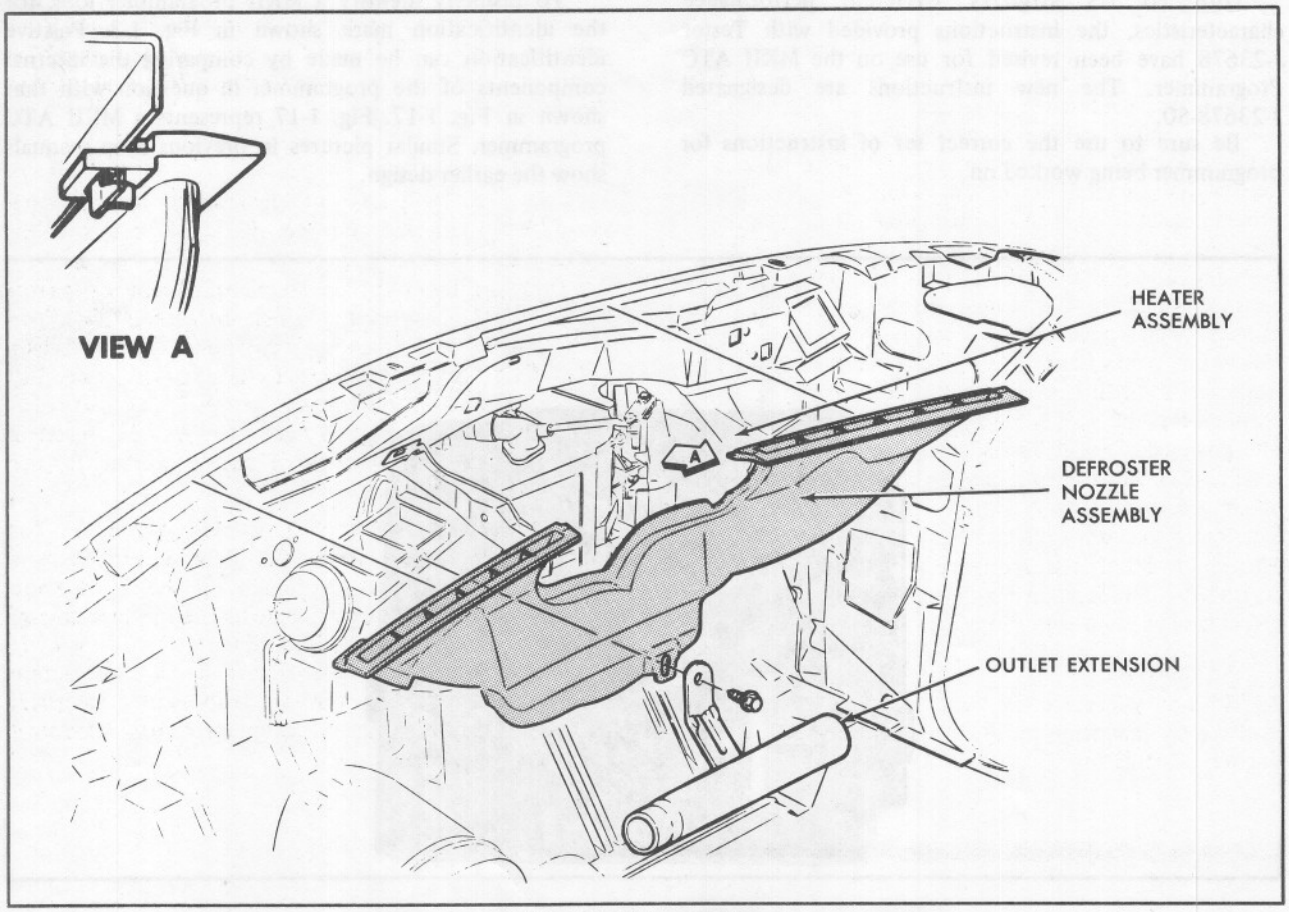


Fig. 1-5 Defroster Nozzle

THEORY OF OPERATION

FRONT AIR CONDITIONER — ALL SERIES

amplifiers, however the MK II amplifier uses a smaller output transistor and eliminates the clip and insulator

programmer is based on the "bleed" principle, identical in concept to the temperature sensor in the thermac air cleaner or the servo in the cruise control system.

The higher efficiency of this type of valve results in a simpler amplifier circuit as well as a more compact transducer.

The revised components in the programmer, Fig. 1-17, are as follows:

a. Transducer
b. Amplifier
c. Restrictor
d. Vacuum level valve
e. Vacuum hoses

The operation of the MK II programmer differs from previous programmers in the following manner: The early transducer is fed manifold vacuum and modulates that vacuum to provide a signal to the power diaphragm proportional to the electrical signal to the transducer coil. The signal vacuum is passed through the vacuum relay which acts as a locking device during periods of low engine vacuum or car shutdown. With the MK II programmer, supply vacuum is metered through a .016" dia. hole in the vacuum relay and the transducer provides a variable vent action which regulates the vacuum signal to the power diaphragm. Because the transducer has high vent flow capacity, a porous metal restriction is provided in the power diaphragm vacuum feed line to maintain the position of the programmer output until the vacuum relay can lock at car shutdown. The power diaphragm incorporates a vacuum level valve which is actuated by the diaphragm plate at the maximum heat end of travel to limit the power diaphragm vacuum level to approximately 6.0 in. hg. This limits the programmer vacuum level preventing the possibility of locking in maximum heater under certain low engine vacuum conditions.

a. Transducer

The transducer is a throttling device, with a vacuum level set by balancing an air force against a ball with a magnetic attraction between the armature and pole

either vacuum, vent or closed operation with no flow at

arrangement of providing heat transfer. Furt

small transducer is a part of the amplifier a

reducing wires and connections.

c. Restrictor

The transducer operates the reverse of the transducer and has high vent flow capacity. In prevent the loss of position during sto operations, it is necessary to add a restrictor bet vacuum relay and motor. This is a sintered plug type.

d. Vacuum Level Valve—Vacuum Motor

Because the transducer is not adjust maximum level, it is necessary to limit the m applied vacuum by other methods. The vacu valve is used to release the programmer f maximum heat position at any manifold level a inches.

e. Vacuum Hoses

The vacuum hoses are revised to incl restrictor installation and accommodate the required by the new design.

There are two important service differences by the MK II programmer. First, because of difference in performance (Programmer move A/C not heat, when system is shut off or disco of the MK II programmer, a new diagno (J-23678-50) for use with the J-23678 ATC required. The new card will be clearly marke with the MK II programmer.

The second difference is a new proce adjusting the air mix door link. The new pro presented in Section 1, Note 53b of the 19 Manual and may be used when adjusting this lin 1971 to 1975 air conditioning system programmer or not). The change in the p involves disconnecting the ambient sensor connector rather than the programmer connector as in previous years.

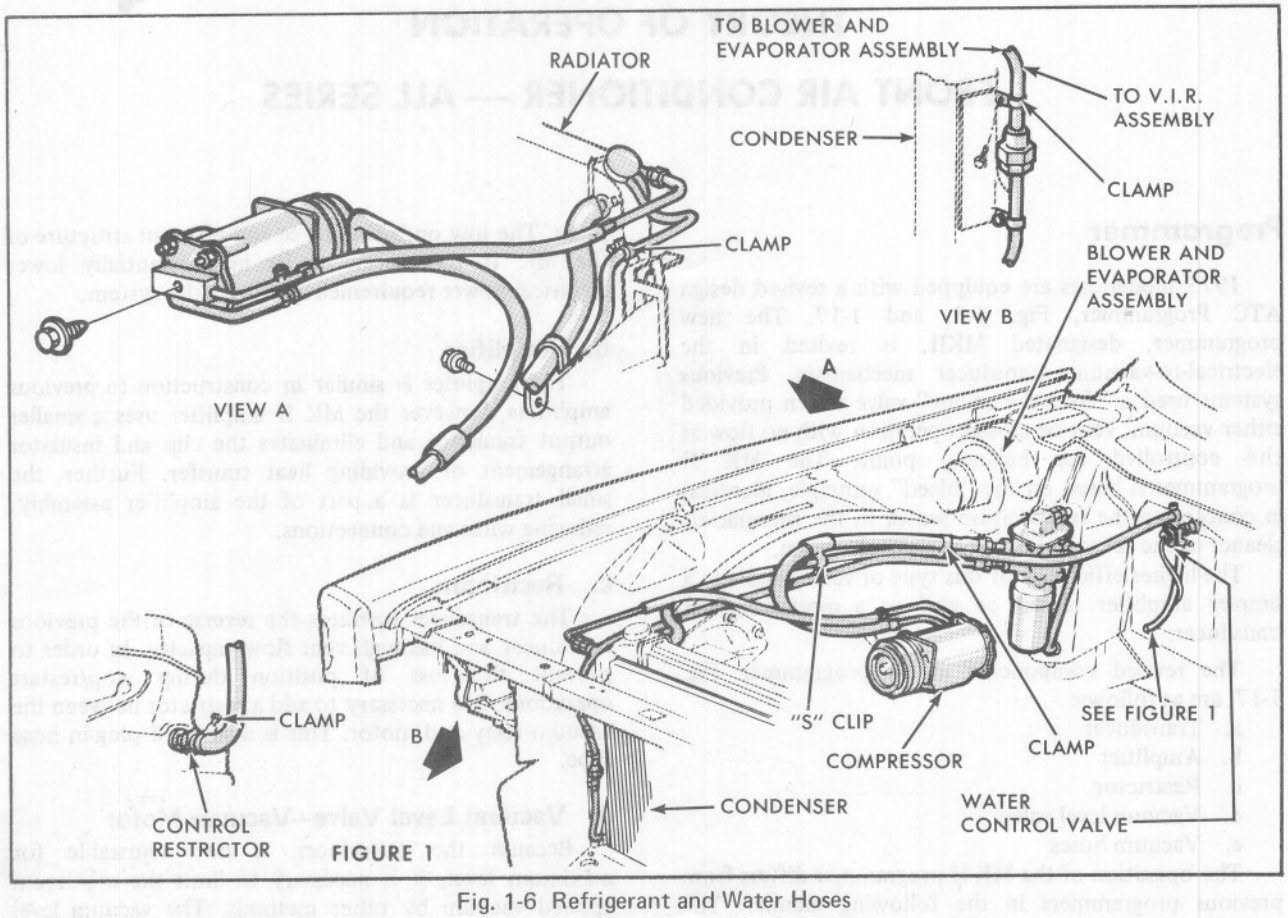


Fig. 1-6 Refrigerant and Water Hoses

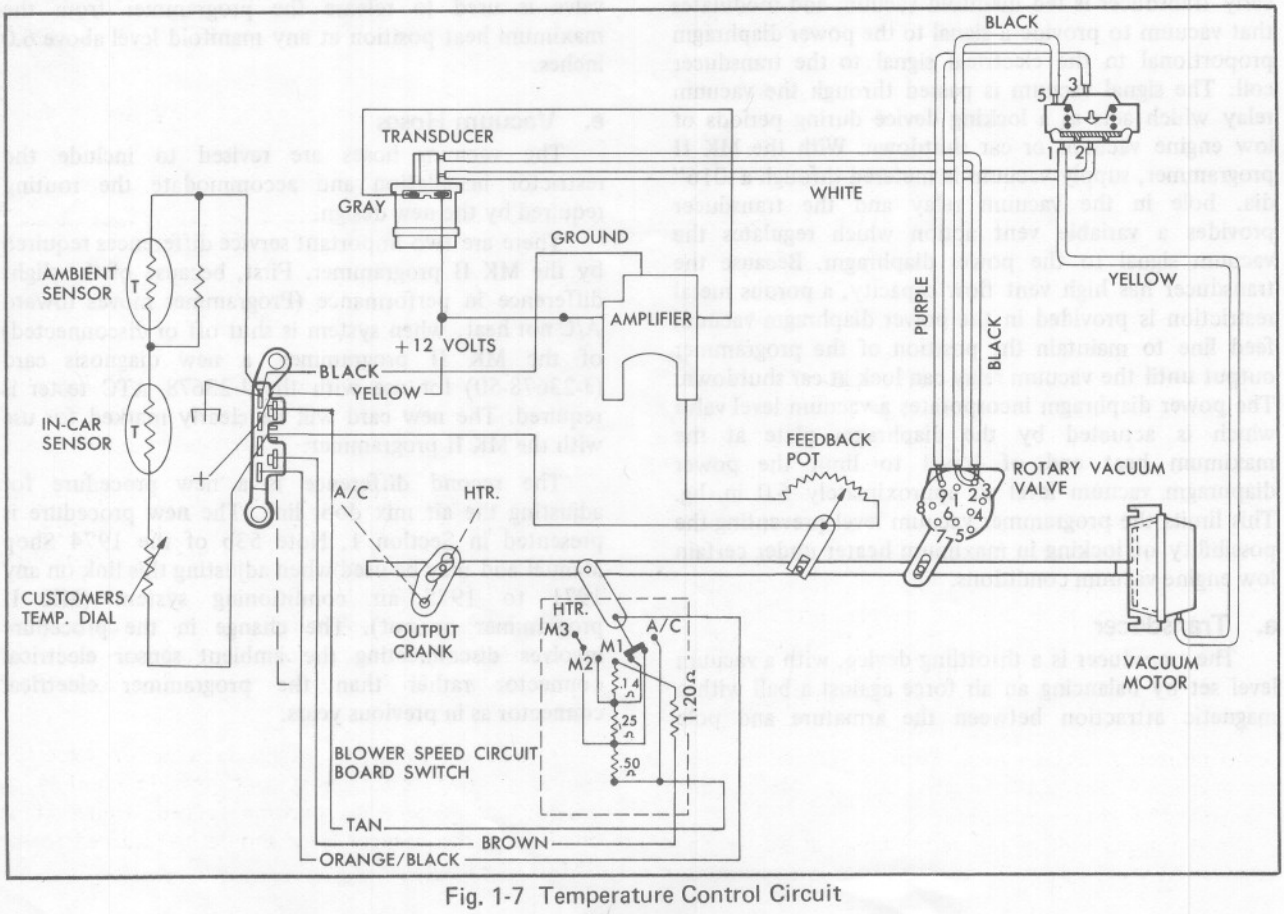


Fig. 1-7 Temperature Control Circuit

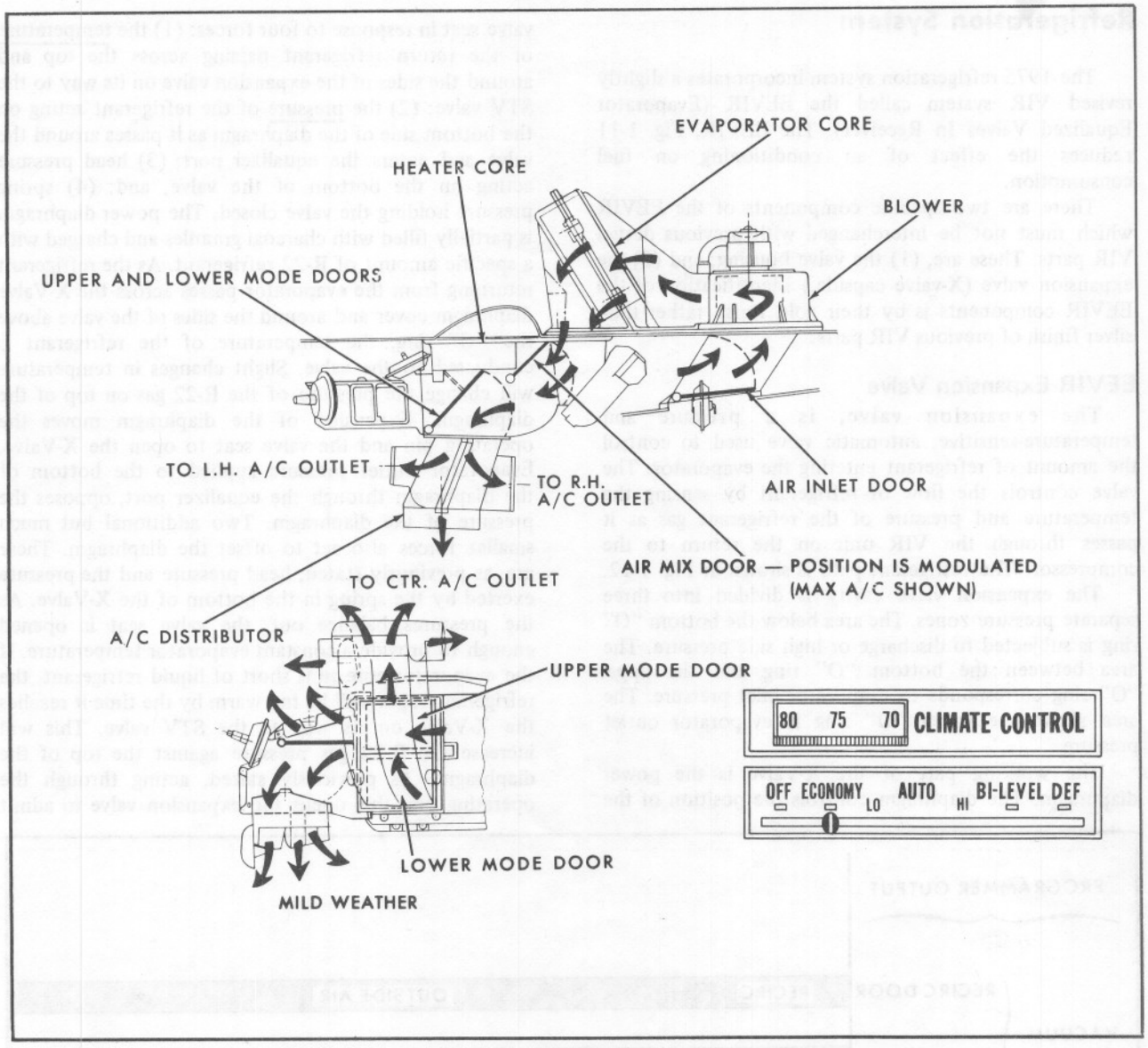


Fig. 1-8 Air Flow at Economy

ECONOMY – Outside air is circulated at an automatically selected blower speed through the evaporator the heater assembly and discharged into the passenger compartment from the air conditioning or heater outlets. Since the compressor is disengaged at this setting, the ability of the system to maintain the dial temperature is restricted. It may be necessary to set the dial approximately 5° cooler than normal to maintain comfort at 50° to 70°F. ambient temperatures.

Four blower speeds, HI, MED_3, MED_2, and MED_1 are utilized. If the car interior is significantly hotter than the temperature on the dial, the blower will start at high and then sequence down to lower speeds as the dial temperature is approached. With a colder interior temperature, the blower will start at MED_3 and sequence down to lower speeds.

In the upper part of the usable range of this setting (approximately 50°F. to 70°F.), air is delivered from the air conditioner outlets. Below 50°F., air is delivered in BI-LEVEL fashion – from both the air conditioner and heater outlets or from the heater outlet only in cold weather. If the car interior is above approximately 75°F., the system will turn on immediately when the car is operated. If the car is below 75°F., system turn-on will be delayed, if the engine is cold, until engine coolant reaches approximately 120°F.

The Economy setting is designed so that it is possible to maintain comfort at ambient temperatures below approximately 70°F. without having the compressor operate.

In some situations (high sunload or excessive humidity) this setting may not provide comfort or windows may tend to become fogged. Under these conditions, the control lever should be returned to the "AUTO" setting.

Refrigeration System

The 1975 refrigeration system incorporates a slightly revised VIR system called the EEVIR (Evaporator Equalized Valves In Receiver). The EEVIR, Fig. 1-11 reduces the effect of air conditioning on fuel consumption.

There are two specific components of the EEVIR which must not be interchanged with previous design VIR parts. These are, (1) the valve housing, and (2) the expansion valve (X-valve capsule.) Identification of the EEVIR components is by their gold finish rather than silver finish of previous VIR parts.

EEVIR Expansion Valve

The expansion valve, is a pressure and temperature-sensitive, automatic valve used to control the amount of refrigerant entering the evaporator. The valve controls the flow of refrigerant by sensing the temperature and pressure of the refrigerant gas as it passes through the VIR unit on the return to the compressor. The refrigerant path is shown in Fig. 1-12.

The expansion valve cavity is divided into three separate pressure zones. The area below the bottom "O" ring is subjected to discharge or high side pressure. The area between the bottom "O" ring and the upper "O" ring corresponds to evaporator inlet pressure. The area above the upper "O" ring is evaporator outlet pressure.

The working part of the X-Valve is the power diaphragm. The diaphragm controls the position of the valve seat in response to four forces: (1) the temperature of the return refrigerant passing across the top and around the sides of the expansion valve on its way to the STV valve; (2) the pressure of the refrigerant acting on the bottom side of the diaphragm as it passes around the valve and enters the equalizer port; (3) head pressure acting on the bottom of the valve, and; (4) spring pressure holding the valve closed. The power diaphragm is partially filled with charcoal granules and charged with a specific amount of R-22 refrigerant. As the refrigerant returning from the evaporator passes across the X-Valve diaphragm cover and around the sides of the valve above the "O" ring, the temperature of the refrigerant is conducted to the valve. Slight changes in temperature will change the pressure of the R-22 gas on top of the diaphragm. Expansion of the diaphragm moves the operating pin and the valve seat to open the X-Valve. Evaporator outlet pressure applied to the bottom of the diaphragm through the equalizer port, opposes the pressure of the diaphragm. Two additional but much smaller forces also act to offset the diaphragm. These are, as previously stated, head pressure and the pressure exerted by the spring in the bottom of the X-Valve. As the pressures balance out, the valve seat is opened enough to provide a constant evaporator temperature. If the evaporator core runs short of liquid refrigerant, the refrigerant vapor will be too warm by the time it reaches the X-Valve on its way to the STV valve. This will increase the R-22 gas pressure against the top of the diaphragm. As previously stated, acting through the operating pin, this opens the expansion valve to admit

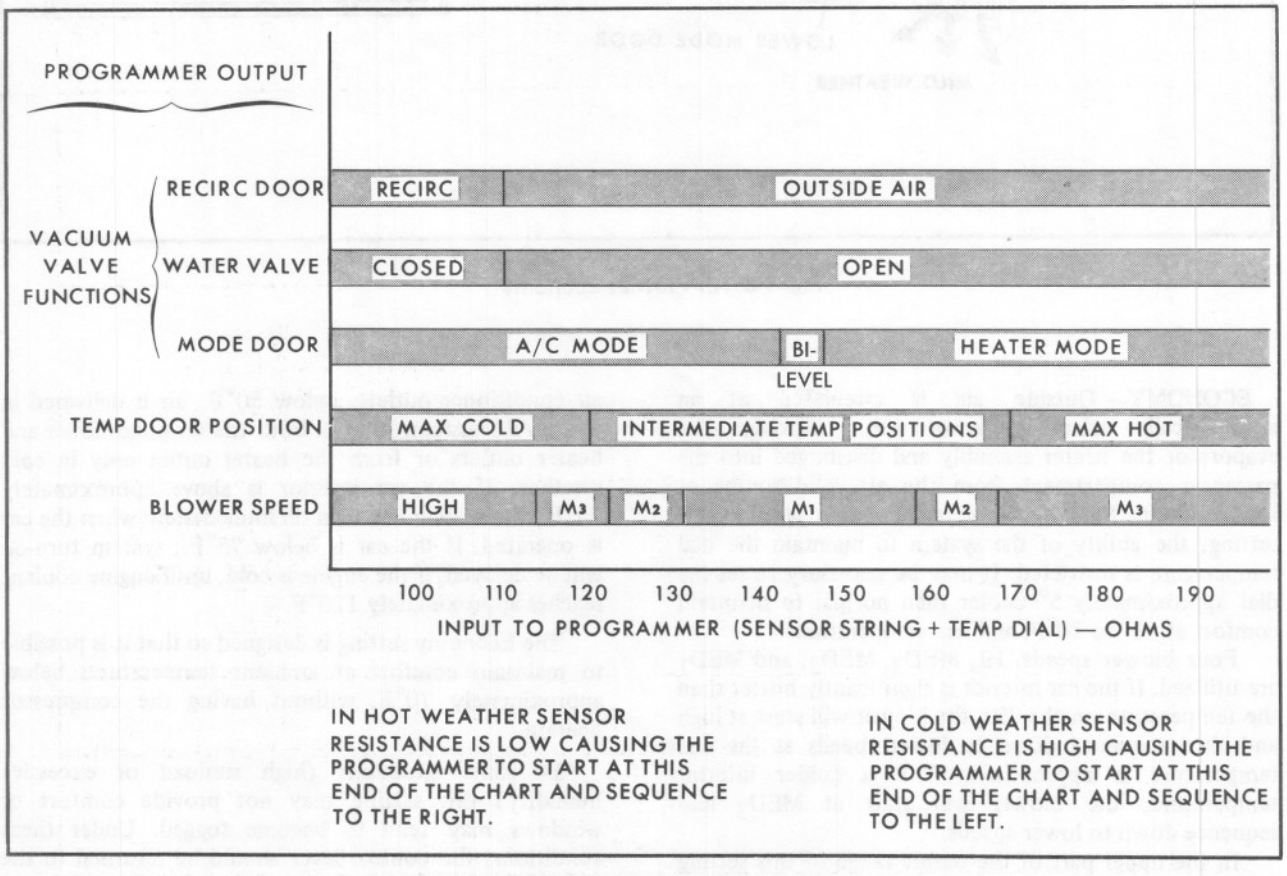


Fig. 1-9 Programmer Input-Output Chart

		SYSTEM RESPONSE						
		BLOWER SPEED	AIR INLET DOOR POSITION	TEMPERATURE DOOR POSITION	MODE DOORS POSITION	DEFROSTER DOOR POSITION	COMPRESSOR	HTR-WATER SHUT-OFF VALVE	IS BLOWER DELAYED FOR ENGINE WATER WARMUP?
CONTROL LEVER SETTINGS	OFF	FIXED LOW 5.0V – HTR 4.5V – A/C	OUTSIDE AIR	VARIES – RESPONSIVE TO SENSORS	FORCED TO HEATER	SEALED	DOESN'T OPERATE	USUALLY OPEN – EXC. CLOSED AT MAX. A/C POSITION OF PROGRAMMER	YES*
	ECON.	VARIABLE BLOWER PROGRAM			EITHER HEATER, BI-LEVEL OR A/C DEPENDS ON PROGRAMMER POSITION	DOOR WILL ASSUME "BLEED" POSITION AFTER 45 SECOND DELAY AND WILL DELIVER BLEED AIR TO W/S IF IN HEATER OR BI-LEVEL MODE			NO – BLOWER IS TURNED ON BY O'RIDE SW.
	LO	FIXED LOW 5.0V – HTR 4.5V – A/C					OPERATES ABOVE APPROX. 37°		YES – EXCEPT WHEN CAR INTERIOR IS WARM, IN WHICH CASE IN-CAR SWITCH ON CONTROL HEAD TURNS BLOWER ON IMMEDIATELY, EVEN IF ENGINE IS COLD.
	AUTO.	VARIABLE BLOWER PROGRAM	RECIRCULATE AIR WHEN PROGRAMMER IS AT MAX. A/C - OTHERWISE OUTSIDE AIR						
	HI	FIXED HI 13.5 V							
	BI-LEVEL	VARIABLE BLOWER PROGRAM			BI-LEVEL			OPEN	
	DEF	FIXED HI - 13.5 V			FORCED TO HEATER	FULL OPEN TO W/S			NO – BLOWER IS TURNED ON BY O'RIDE SW.

Fig. 1-10 System Operation at Various Lever Settings

REFRIGERATION DIAGNOSIS CHART – EE VALVES-IN-RECEIVER SYSTEM

Observe refrigeration system in areas listed below while engine operates at 2,000 RPM with control lever in "HI" and temperature dial at 65. All windows should be open and hood should be up. Blower motor should be disconnected when required in chart.

System Condition	OBSERVED OPERATING CONDITIONS						System Correction
	Outlet Air Temp.	Sight Glass	Head Pressure at Ambient Temperature	Evaporator Pressure	Evaporator Outlet Pipe Temperature	Oil Bleed Line Temperature	
Normal	40 - 50°	Clear	70° 80° 90° 100° 160# 190# 220# 250# 200# 230# 260# 290#	28-32 PSIG	Cold	Warm	
With Blower Lead Off	No Air Flow		Lower than Normal	Maintains Pressure		Gets Cold	
Refrigerant * Charge Low	Warm	Foamy or Bubbly †	Lower than Normal	Normal to Low	Warm	Cold	Find Leak. Repair and Recharge.
VIR Liquid * Pickup Tube Screen Partially Plugged	Warm	Foamy or Bubbly	Low	Normal to Low	Cool or Warm	Cool or Warm	Clean Screen and System as Required. Change Desiccant and Recharge.
Refrigerant * Charge Lost	Warm	Clear	Very Low	Very Low	Warm	Warm	Find Leak. Repair, Change Desiccant and Recharge.
Refrigerant Overcharge Blows Relief Valve on Hot Days	Normal	Clear	High	Normal	Cold	Warm	Recharge to the Specified Charge.
X-Valve * Diaphragm ** Discharged (Failed Closed)	Warm	Clear	Low	Low ***	Warm	Cold	Replace X-Valve Capsule.
Vacuum Loss * in STV †† Capsule Bellows or Valve Piston Stuck Closed	Warm	Foamy or Bubbly	Low	High	Warm	Warm	Replace STV Capsule.
STV Stuck Open	Cold Evaporator May Ice Up Affecting Air Flow	Clear	Low	Normal to Low ***	Cold	Warm	Replace STV Capsule.
STV Setting too High	Warm	Clear	Normal	High	Cool to Warm	Cool or Warm	Replace STV Capsule.

* – Superheat Switch May Close and Thermal Fuse Link Open to Shut Off the Compressor.
** – Allow the System to Warm Up and Equalize Before Repeating the Test. If the Condition Doesn't Recur the System has Excess Moisture Causing Ice to Form in the Valve. Discharge the System, Replace the Bag of Desiccant, Evacuate the System for 30 Minutes and Recharge.
*** – Goes to Low Pressure or Vacuum with Blower Disconnected.
† – May be Bubbly or Clear with Blower Disconnected.
†† – System Will Not Accept Charge.

more liquid refrigerant to the evaporator core. Conversely if the evaporator core has too much liquid, the refrigerant passing over the X-Valve will be too cold thus relaxing some of the pressure on the diaphragm allowing it to move toward its closed position thus reducing the flow of liquid refrigerant.

The X-Valve is factory adjusted and cannot be reset or repaired in the field. When it is determined that the valve is malfunctioning, the entire capsule must be replaced.

Equalizer Functions of EEVIR

The equalizer port is used to speed up the opening of the expansion valve under certain conditions. If the STV is throttling toward the closed position to slow down cooling, the upper end of the evaporator core would in time become warm, and this heat would eventually open the expansion valve, due to the pressure of the R-22 gas in the power diaphragm. However, at higher car speeds, this length of time could be too great to provide an even outlet temperature because of the time it takes to cool the evaporator core after the expansion valve has opened. To eliminate this fluctuation of temperature and smooth out the cooling to a more constant temperature the equalizer feature was added to help the X-Valve power diaphragm move the valve to the open position without waiting for the X-Valve to warm up.

As the pressure drops in the equalizer port and under the diaphragm, the expansion valve would operate the same as if the X-Valve was being heated and exerting increased pressure on top of the diaphragm. The expansion valve, therefore, would open and allow refrigerant to flow into the evaporator core because of the reduced pressure under the diaphragm rather than due to a pressure increase on top of the diaphragm.

The equalizer port in the EEVIR is a drilled hole in the X-Valve below the power diaphragm. This area is exposed to evaporator pressure by eliminating the top "O" ring used in previous VIR Assemblies. This allows evaporator pressure to enter the equalizer port and eliminates the need for a drilled passage between the STV and X-Valve cavities found in previous assemblies.

Condenser

The condenser is an aluminum, tube-and-fin heat transfer unit directly forward of the radiator, Fig. 1-2. The function of the condenser is to transfer heat from the refrigerant flowing through its tubes to the airstream drawn through it by the engine fan. The 1975 condenser is wider by 3-1/2 inches than previous designs. The increased condenser size provides more efficient cooling during heavy traffic – hot weather situations.

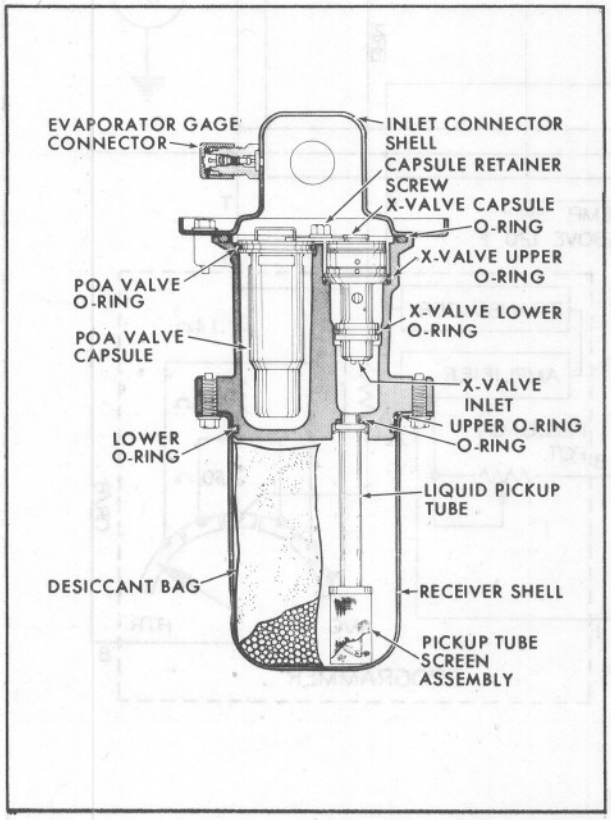


Fig. 1-11 EEVIR Assembly Cut-Away View

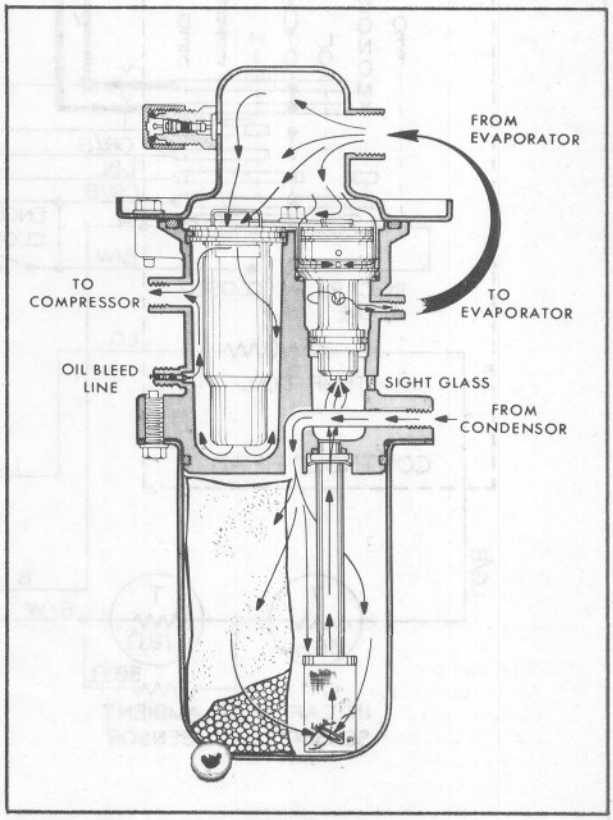


Fig. 1-12 Refrigerant Flow

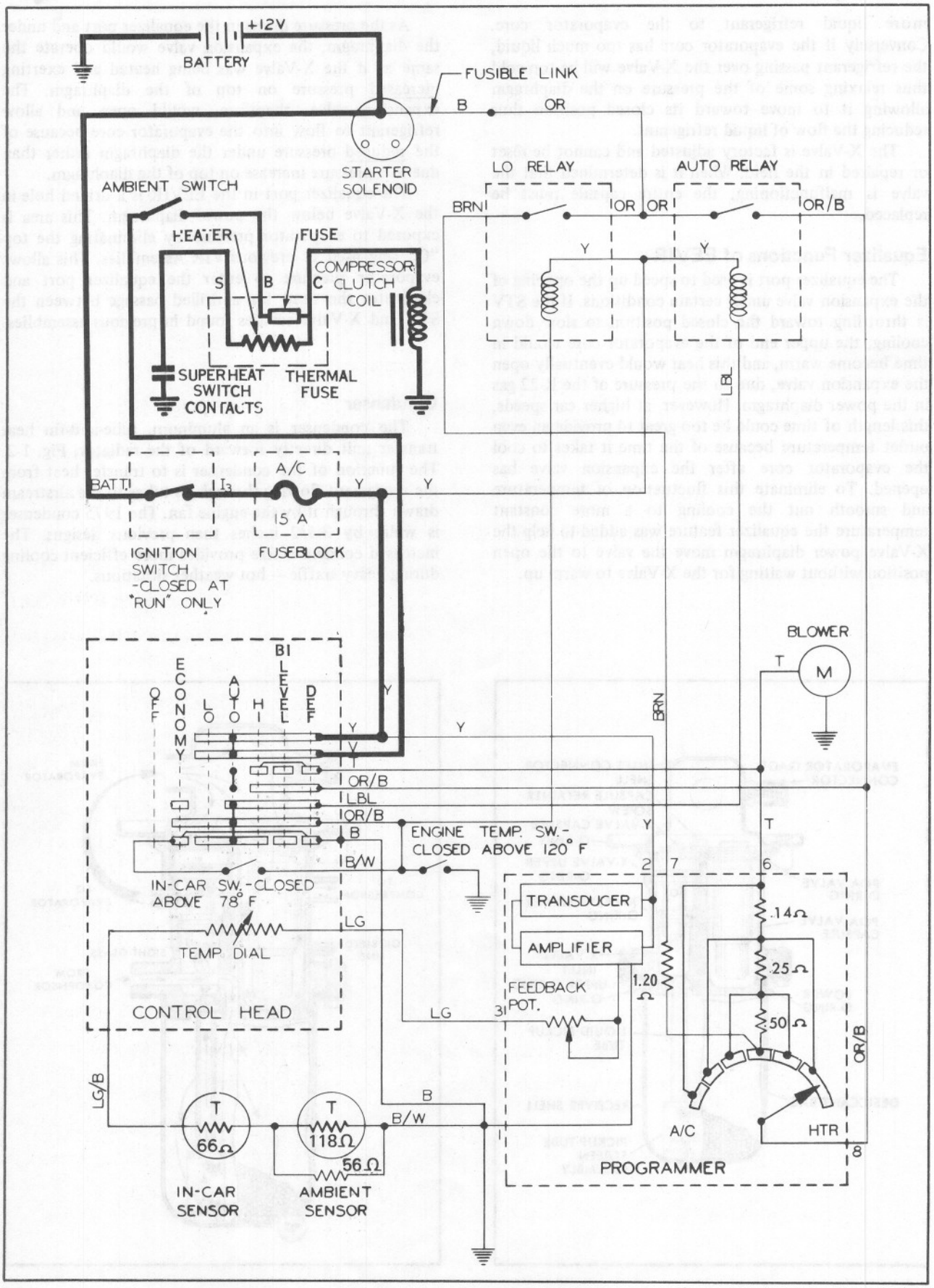


Fig. 1-13 Compressor Electrical Circuit

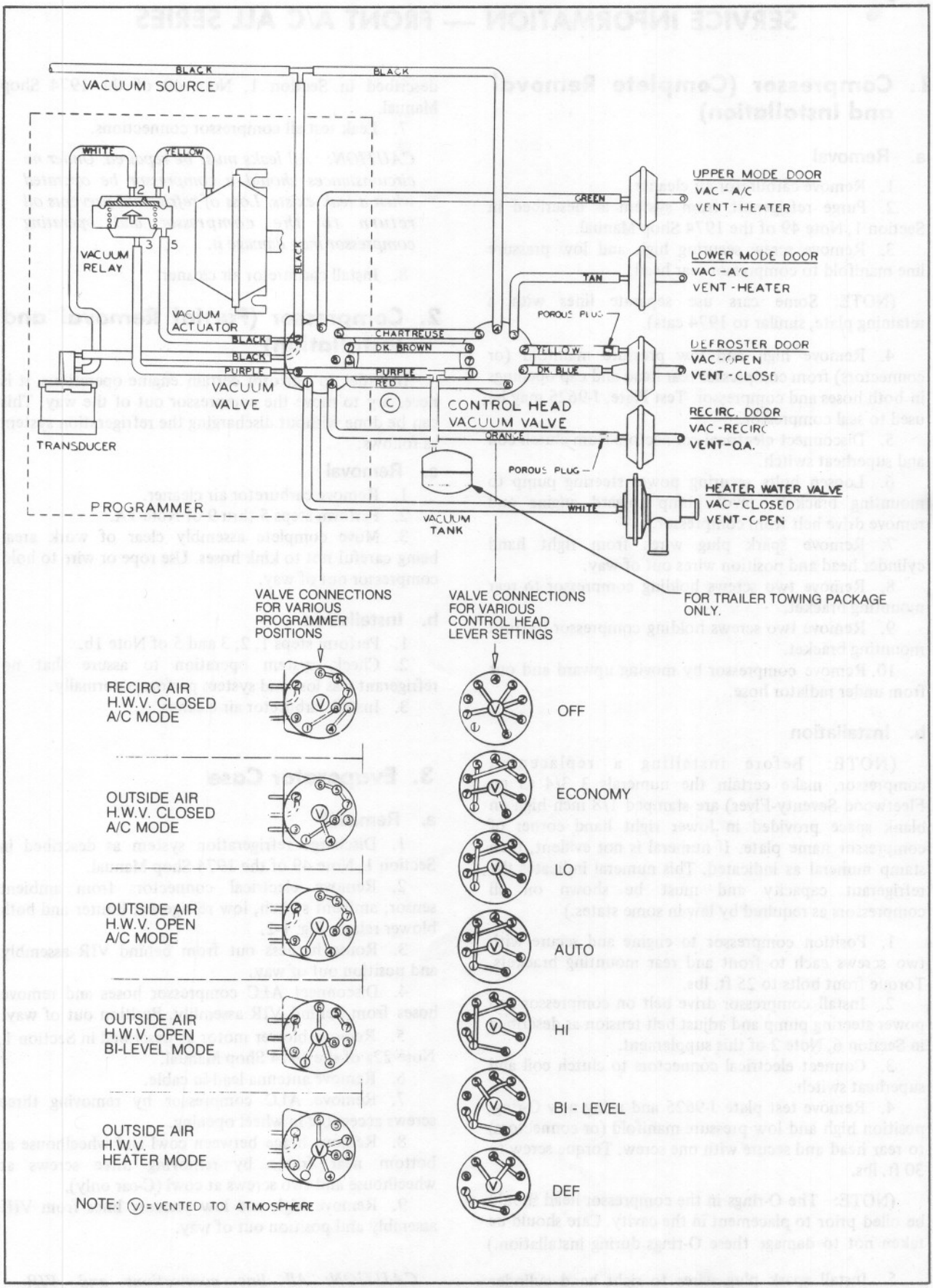


Fig. 1-14 Complete Vacuum Circuit

SERVICE INFORMATION — FRONT A/C ALL SERIES

1. Compressor (Complete Removal and Installation)

a. Removal

1. Remove carburetor air cleaner.
2. Purge refrigerant from system as described in Section 1, Note 49 of the 1974 Shop Manual.
3. Remove screw securing high and low pressure line manifold to compressor rear head.

(NOTE: Some cars use separate lines with a retaining plate, similar to 1974 cars).

4. Remove high and low pressure manifold (or connectors) from compressor rear head and cap openings in both hoses and compressor. Test Plate, J-9625 may be used to seal compressor.
5. Disconnect electrical connectors from clutch coil and superheat switch.
6. Loosen bolts securing power steering pump to mounting brackets, pivot pump toward engine and remove drive belt from compressor.
7. Remove spark plug wires from right hand cylinder head and position wires out of way.
8. Remove two screws holding compressor to rear mounting bracket.
9. Remove two screws holding compressor to front mounting bracket.
10. Remove compressor by moving upward and out from under radiator hose.

b. Installation

(NOTE: Before installing a replacement compressor, make certain the numerals 3 3/4 (5 on Fleetwood Seventy-Fives) are stamped 1/8 inch high on blank space provided in lower right hand corner of compressor name plate. If numeral is not evident, then stamp numeral as indicated. This numeral indicates the refrigerant capacity and must be shown on all compressors as required by law in some states.)

1. Position compressor to engine and secure with two screws each to front and rear mounting brackets. Torque front bolts to 25 ft. lbs.
2. Install compressor drive belt on compressor and power steering pump and adjust belt tension as described in Section 6, Note 2 of this supplement.
3. Connect electrical connectors to clutch coil and superheat switch.
4. Remove test plate J-9625 and using new O-ring, position high and low pressure manifold (or connectors) to rear head and secure with one screw. Torque screw to 30 ft. lbs.

(NOTE: The O-rings in the compressor head should be oiled prior to placement in the cavity. Care should be taken not to damage these O-rings during installation.)

5. Install spark plug wires to right hand cylinder head.
6. Evacuate and charge refrigeration system as described in Section 1, Note 49 of the 1974 Shop Manual.
7. Leak test all compressor connections.

CAUTION: All leaks must be repaired. Under no circumstances should a compressor be operated when a leak exists. Loss of refrigerant prevents oil return to the compressor and operating compressor may damage it.

8. Install carburetor air cleaner.

2. Compressor (Partial Removal and Installation)

In order to perform certain engine operations, it is necessary to move the compressor out of the way. This can be done without discharging the refrigeration system as follows:

a. Removal

1. Remove carburetor air cleaner.
2. Perform steps 5 thru 9 of Note 1A.
3. Move complete assembly clear of work area, being careful not to kink hoses. Use rope or wire to hold compressor out of way.

b. Installation

1. Perform steps 1, 2, 3 and 5 of Note 1b.
2. Check system operation to assure that no refrigerant was lost and system performs normally.
3. Install carburetor air cleaner.

3. Evaporator Case

a. Removal

1. Discharge refrigeration system as described in Section 1, Note 49 of the 1974 Shop Manual.
2. Remove electrical connectors from ambient sensor, ambient switch, low refrigerant limiter and both blower relays, Fig. 1-2.
3. Route harness out from behind VIR assembly and position out of way.
4. Disconnect ALC compressor hoses and remove hoses from behind VIR assembly. Position out of way.
5. Remove blower motor as described in Section 1, Note 22a of the 1974 Shop Manual.
6. Remove antenna lead-in cable.
7. Remove ALC compressor by removing three screws accessible in wheel opening.
8. Remove brace between cowl and wheelhouse at bottom near frame by removing three screws at wheelhouse and two screws at cowl (C-car only).
9. Remove high and low pressure lines from VIR assembly and position out of way.

CAUTION: All line connections and VIR openings must be plugged or sealed immediately to prevent entry of dirt and moisture into system.

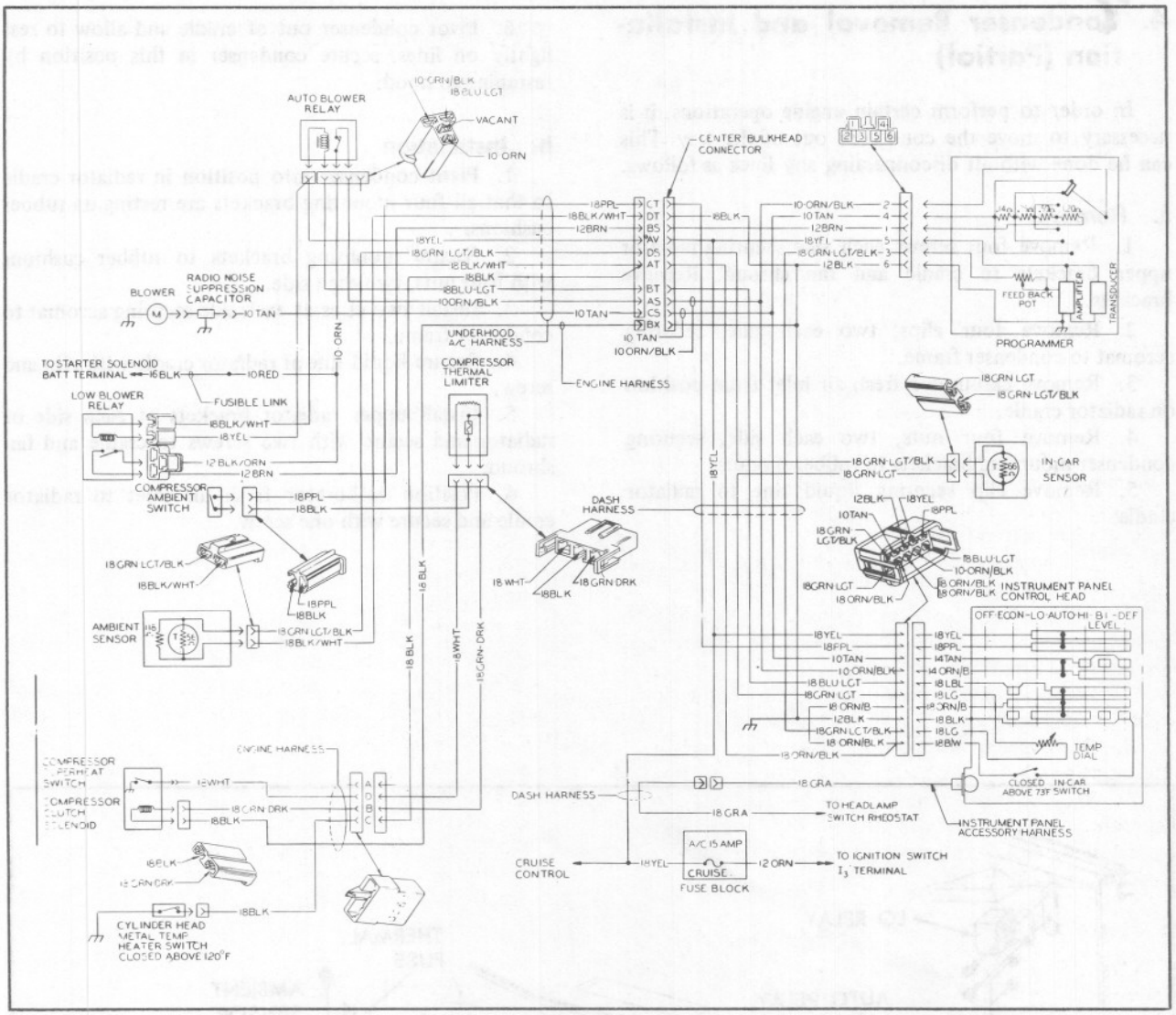


Fig. 1-15 Complete Electrical Circuit

10. Remove right-hand tie-strut at wheelhouse and position out of way (C-car only).

11. Remove two nuts and four screws securing evaporator case to cowl, Fig. 1-16.

12. Move evaporator case away from cowl and cut gasket at air-inlet-to-evaporator case joint. Push air inlet back into cowl.

13. Remove evaporator case by twisting out from under hood hinge.

b. Installation

1. Position evaporator case to cowl making sure gasket will seal properly where it has been cut. Use sealer as required.

2. Loosely install two nuts and four screws holding evaporator case to cowl, Fig. 1-16.

3. Torque fasteners installed in Step 2 to 12 in. lbs.

4. Connect high and low pressure lines to VIR assembly using new O-rings.

5. Position right-hand tie-strut to wheelhouse and secure with two nuts. Torque nuts to 20 in. lbs. (C-car only).

6. Install brace between cowl and wheelhouse at bottom near frame by installing three screws at wheelhouse and two screws at cowl. Torque wheelhouse screws to 20 ft. lbs. and cowl screws to 20 ft. lbs. (C-car only).

7. Install ALC compressor and secure with three screws accessible in wheel opening. Torque screws to 60 in. lbs.

8. Route ALC vacuum hoses behind VIR assembly and connect to compressor. Yellow hose to top port, black hose to bottom port.

9. Install antenna lead-in cable.

10. Install blower motor as described in Section 1, Note 22b of the 1974 Shop Manual.

11. Route electrical harness behind VIR assembly and make connections at ambient sensor, ambient switch, low refrigerant limiter and both blower relays, Fig. 1-2.

12. Evacuate and charge refrigeration system as described in Section 1, Note 49 of the 1974 Shop Manual. Leak test all connections.

4. Condenser Removal and Installation (Partial)

In order to perform certain engine operations, it is necessary to move the condenser out of the way. This can be done without disconnecting any lines as follows.

a. Removal

1. Remove four screws each side securing radiator upper brackets to cradle and fan shroud. Remove brackets.
2. Remove four clips, two each side, securing acromat to condenser frame.
3. Remove carburetor fresh air inlet from position on radiator cradle.
4. Remove four nuts, two each side, securing condenser mounting brackets to rubber mounts.
5. Remove clip securing liquid line to radiator cradle.
6. Pivot condenser out of cradle and allow to rest lightly on lines. secure condenser in this position by fastening to hood.

b. Installation

1. Pivot condenser into position in radiator cradle so that all four mounting brackets are resting on rubber cushions.
2. Secure mounting brackets to rubber cushions with four nuts, two each side.
3. Install two clips at each side securing acromat to condenser frame.
4. Secure liquid line at radiator cradle with clip and screw.
5. Install upper radiator brackets at each side of radiator and secure with two screws to cradle and fan shroud.
6. Position carburetor fresh air inlet to radiator cradle and secure with one screw.

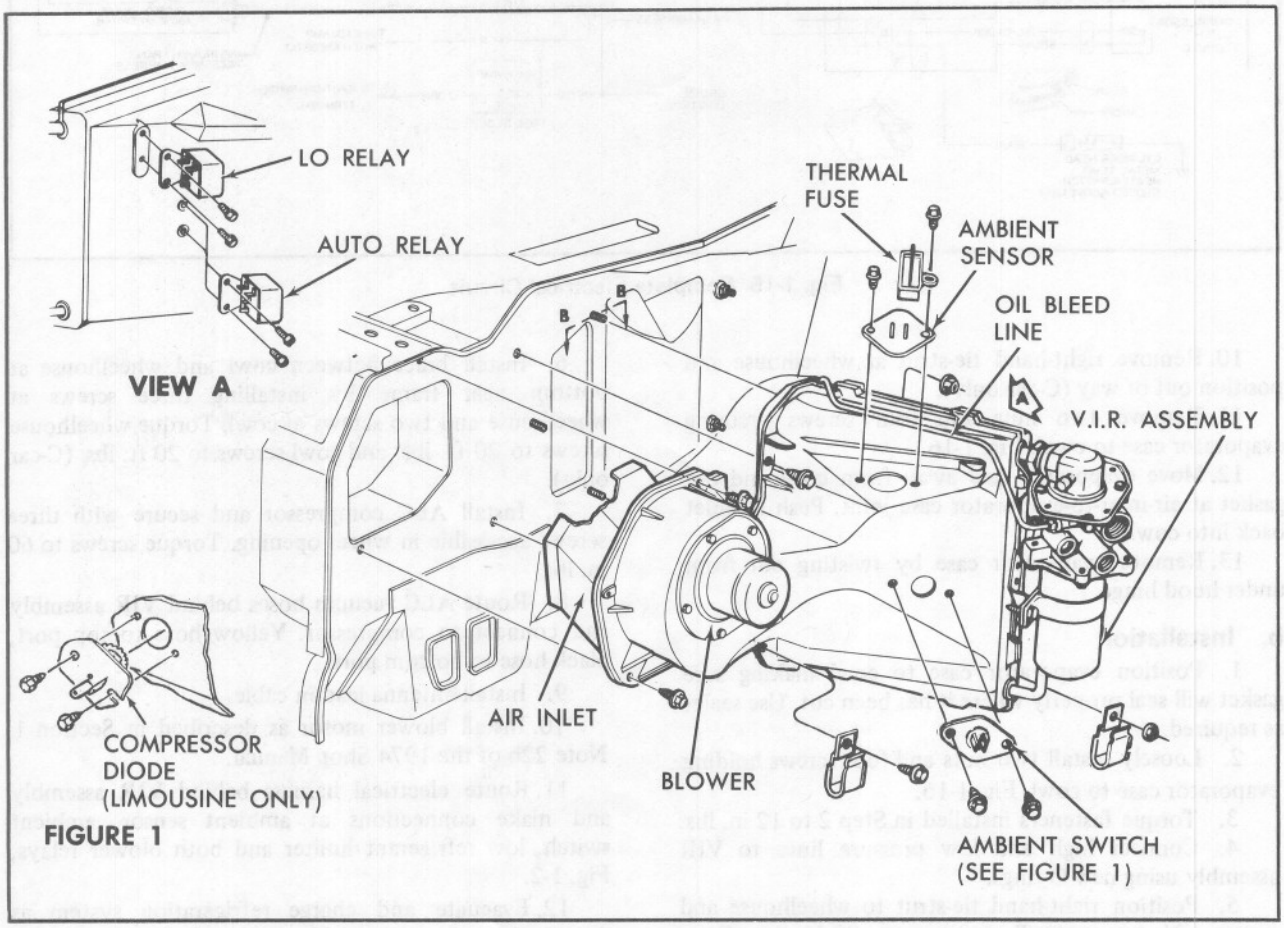


Fig. 1-16 Air Inlet, Blower and Evaporator

PROGRAMMER OVERHAUL

5. Programmer Disassembly

a. Checking Relay Removal

1. Remove programmer as described in Section 1, Note 19a of the 1974 Shop Manual.
2. Remove programmer cover.
3. Remove four hoses from relay and remove relay.

b. Checking Relay Installation

1. Position checking relay in programmer with ports #1 and #2 towards vacuum motor.
2. Make the following vacuum hose connections:

a. White hose from transducer wraps around vacuum motor and connects to port #2, Fig. 1-17.

(NOTE: If this vacuum hose is replaced, the replacement hose must be at least 15" long).

b. Yellow hose from vacuum motor connects to remaining port (#1) on vacuum motor side of relay, Fig. 1-17.

c. Purple hose from "Purp" port of vacuum valve connects to center port on amplifier side of relay, Fig. 1-17.

d. Remaining black hose from center port of vacuum valve connects to outside port on amplifier side of relay, Fig. 1-17.

3. Install programmer cover.
4. Install programmer as described in Section 1, Note 19b. of the 1974 Shop Manual.

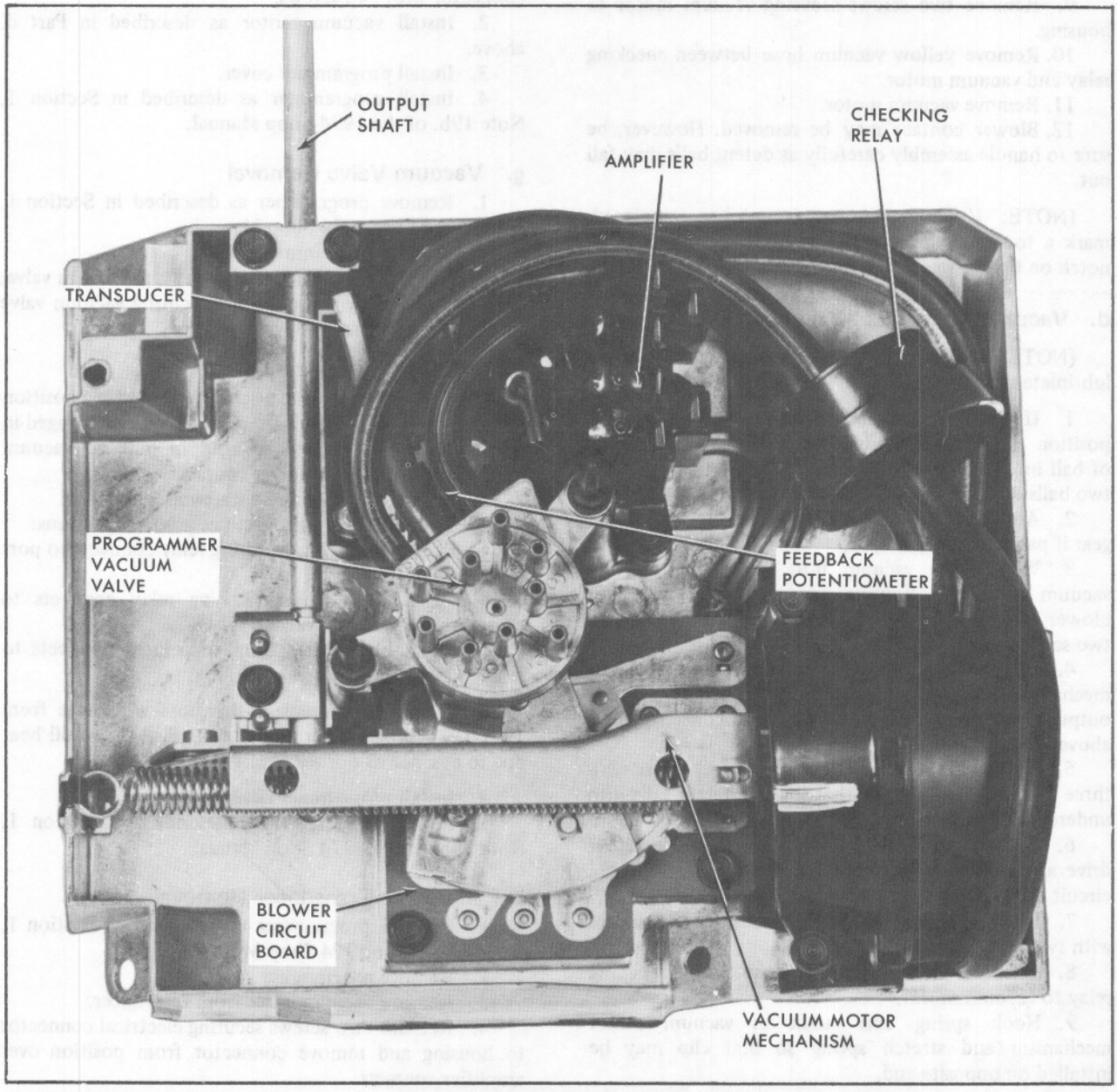


Fig. 1-17 MK II ATC Programmer Components

c. Vacuum Motor Removal

1. Remove programmer as described in Section 1, Note 19a of the 1974 Shop Manual.
2. Remove programmer cover.
3. , Remove two screw/studs securing vacuum valve and swing valve out of way with hoses still attached.
4. Remove vacuum valve actuating link.
5. Remove spring from over blower contact assembly.
6. Remove spring and clip from end of vacuum motor operating link.
7. Remove three output shaft retaining screws and retainers. Disconnect output shaft from vacuum motor mechanism.
8. Disengage bushing from vacuum motor to output shaft pin and from vacuum motor to blower contact mechanism.
9. Remove two screws securing vacuum motor to housing.
10. Remove yellow vacuum hose between checking relay and vacuum motor.
11. Remove vacuum motor.
12. Blower contact may be removed. However, be sure to handle assembly carefully as detent balls may fall out.

(NOTE: If blower contact is not being replaced, mark a tooth on the feedback pot and a corresponding notch on the blower switch gear).

d. Vacuum Motor Installation

(NOTE: During assembly of vacuum motor apply lubriplate or equivalent on all sliding surfaces).

1. If blower contact assembly was removed, position assembly to circuit board. Check for presence of ball in casing pivot hole. Use care to be sure that the two balls do not fall out of blower contact assembly.
2. Align marks on feedback pot and blower contact gear if parts are being reused.
3. With white vacuum hose in position, install vacuum motor to housing. Engage output shaft to blower contact assembly and secure vacuum motor with two screws.
4. Engage output shaft pin in slot of vacuum motor mechanism and vacuum motor mechanism pin in slot of output shaft, being certain vacuum motor mechanism is above retaining post.
5. Install two output shaft retainers and secure with three screws being certain that lower retainer falls into undercut of output shaft.
6. Position spring over circuit board and position drive arm over pins on vacuum motor mechanism and circuit board.
7. Position vacuum valve to housing and secure with two screw/studs.
8. Connect yellow vacuum hose from checking relay to vacuum motor.
9. Hook spring over hook in vacuum motor mechanism and stretch spring so that clip may be installed on opposite end.

e. Blower Circuit Board Removal

1. Remove programmer as described in Section 1, Note 19a. of the 1974 Shop Manual.
2. Remove programmer cover.
3. Remove vacuum motor as described in Part c. above.
4. Remove three screws securing circuit board to housing.
5. Remove two screws securing electrical connector to housing on amplifier.
6. Remove circuit board and electrical connector as an assembly.

f. Blower Circuit Board Installation

1. Position circuit board to programmer and connector over pins on amplifier. Secure circuit board with three screws (short screw closest to amplifier) and connector with two screws.
2. Install vacuum motor as described in Part d. above.
3. Install programmer cover.
4. Install programmer as described in Section 1, Note 19b. of the 1974 Shop Manual.

g. Vacuum Valve Removal

1. Remove programmer as described in Section 1, Note 19a. of the 1974 Shop Manual.
2. Remove programmer cover.
3. Remove three vacuum hoses from vacuum valve.
4. Remove two screw/studs securing vacuum valve to housing and remove valve.

h. Vacuum Valve Installation

1. With vacuum valve spring in place, position vacuum valve to housing with pins on bottom engaged in drive arm and drive arm engaged in pins on vacuum motor mechanism and blower contact.
2. Secure vacuum valve with two screw/studs.
3. Make the following vacuum hose connections:

a. Purple hose from checking relay connects to port marked "Purp", Fig. 1-17.

b. Black hose from checking relay connects to center port of vacuum valve, Fig. 1-17.

c. Small black hose from transducer connects to remaining port of vacuum valve, Fig. 1-17.

(NOTE: Do not replace this hose with hose from 1971-1974 programmer as system will lock in full heat due to absence of porous plug.)

4. Install programmer cover.
5. Install programmer as described in Section 1, Note 19b. of the 1974 Shop Manual.

i. Amplifier-Transducer Removal

1. Remove programmer as described in Section 1, Note 19a. of the 1974 Shop Manual.
2. Remove programmer cover.
3. Remove vacuum hoses from transducer.
4. , Remove two screws securing electrical connector to housing and remove connector from position over amplifier contacts.

5. Remove two screws securing potentiometer and amplifier to housing and remove amplifier-transducer assembly.

j. Amplifier-Transducer Installation

1. Position amplifier-transducer to housing and secure with two screws at potentiometer.
2. Position electrical connector over amplifier terminals and secure connector with two screws.
3. Connect vacuum hoses to transducer.
4. Install programmer as described in Section 1, Note 19b of the 1974 Shop Manual.
5. Calibrate feedback pot as described in Section 1, Note 53c. of the 1974 Shop Manual.
6. Install programmer cover.

GENERAL DESCRIPTION

Operation of the Seat Belt-Starter Interlock System is unchanged. There are several wiring routing and color code changes which are due primarily to the use of High Energy Ignition as standard equipment, two bulkhead connectors and seat belt and switch wiring changes.

The Diode Assembly lead from the seat belt warning buzzer is 18 gage yellow. A 5 AMP GAGE fuse is used for both 1974 and 1975.

A complete seat belt-starter interlock wiring circuit diagram is shown in Fig. 1-18.

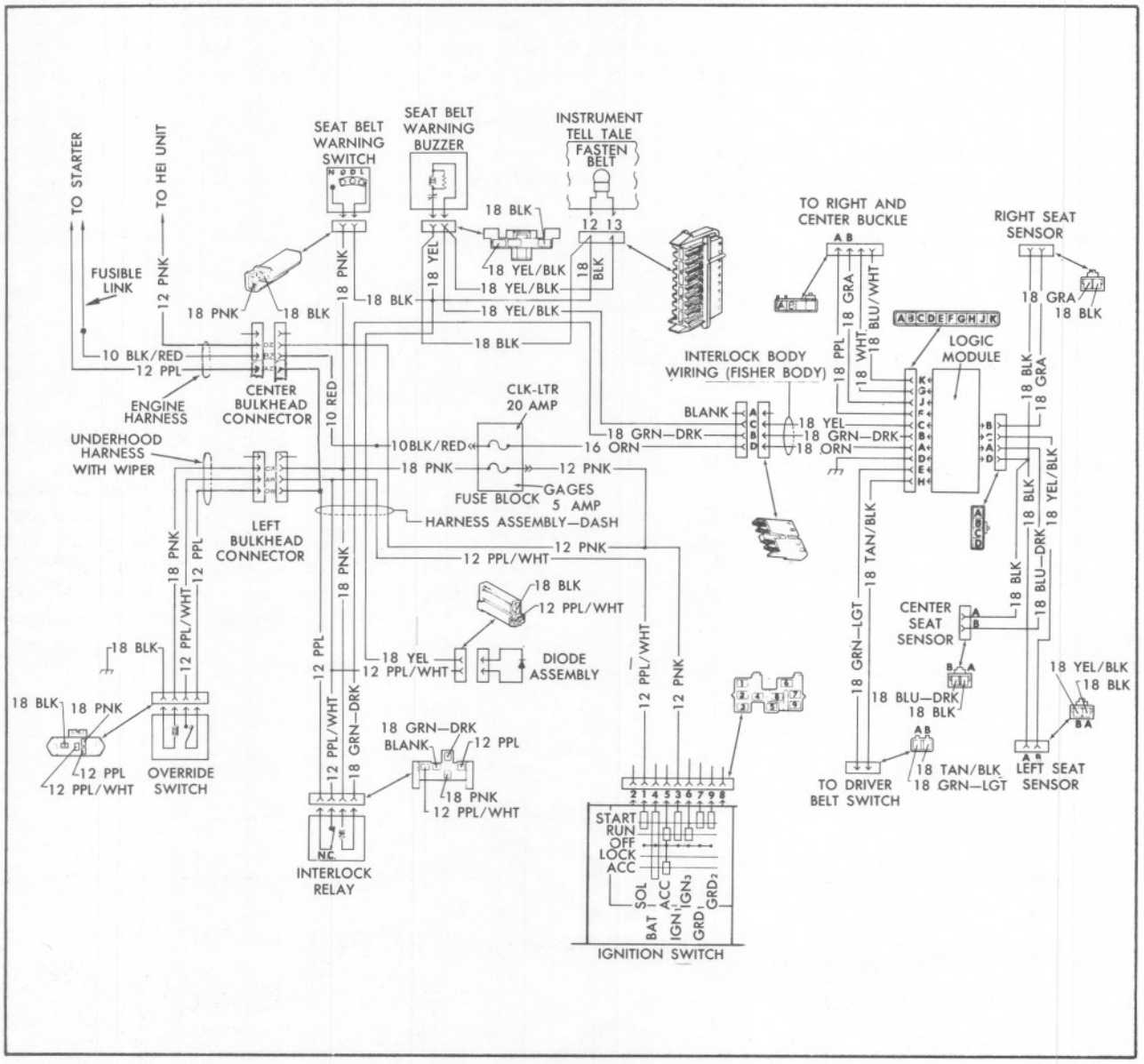


Fig. 1-18 Seat Belt/Starter Interlock Wiring

GENERAL DESCRIPTION

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM DO NOT ATTEMPT ANY REPAIR OR REMOVAL OF ANY PORTION OF THE FRAME WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF THE BUMPER IMPULSE DETECTOR UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS. IN ADDITION, CARE MUST BE EXERCISED TO NEVER BUMP OR STRIKE THE BUMPER IMPULSE DETECTOR IN A MANNER WHICH COULD CAUSE INADVERTENT DEPLOYMENT OR IMPROPER OPERATION OF THE SYSTEM.

A.C.R.S. DISCONNECTION PROCEDURE

Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

A full frame cross member Fig. 2-1 and 2-2, is used at the rear of the transmission. The rear engine mount is fastened to the cross member.

Body to frame cross rods have been added in the rear axle area on Eldorados to restrain relative lateral motion. This restraint system contributes to improved rolling smoothness, Fig. 2-3.

The slide-in body castings are connected to stamped brackets at the upper shock absorber mounts with cross rods. It is important that the rubber insulators are properly positioned for fuel line protection, Fig. 2-3.

Installation is as follows:

With rod ball seated in underbody retainer, place .150" shim (5/32") between frame bracket face and tension gaging nut, Fig. 2-3. Finger tighten gaging nut. Remove shim and tighten rod end nut to 20-25 foot-pounds until jammed. This results in a 800-1,000 pound tension load on the rods. Body mounts have been revised, Fig. 2-4.

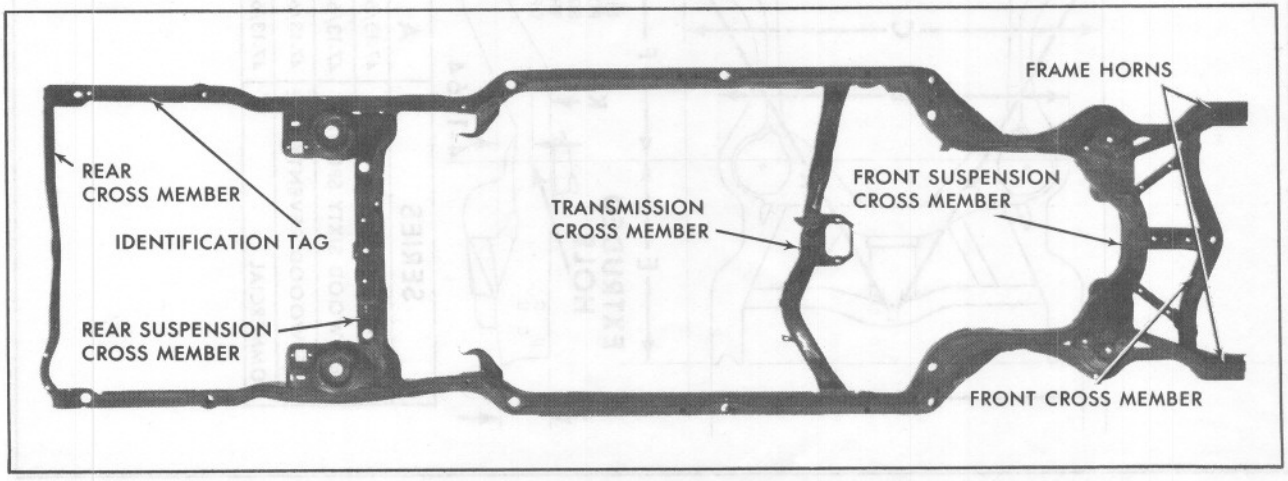
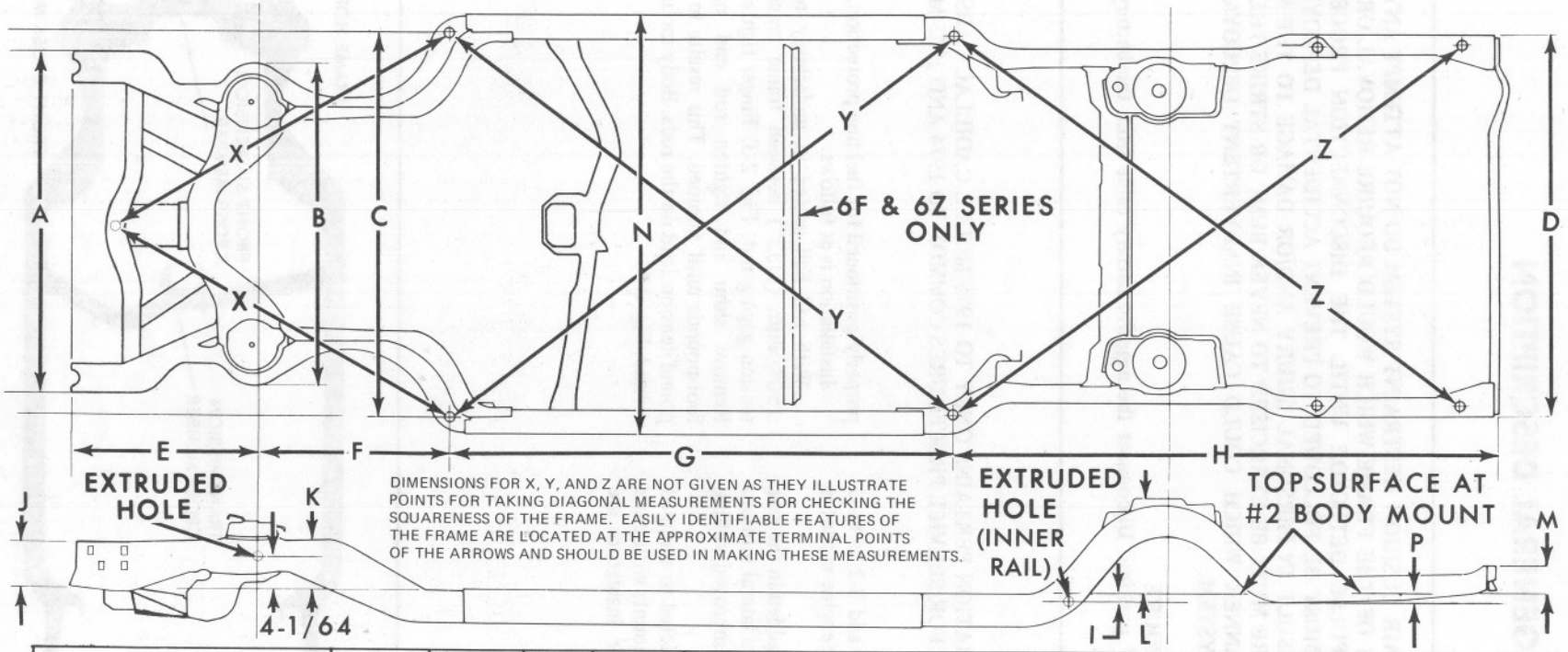


Fig. 2-1 Frame (Except Eldorado)



SERIES	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
DEVILLE & CALAIS	47-13/64	46-13/64	55-1/8	54-25/32	25-23/32	27-15/32	72-5/64	77-3/4	11/16	5-39/64	7-1/32	13-1/2	4	59-21/32	
FLEETWOOD SIXTY SPECIAL	47-13/64	46-13/64	55-1/8	54-25/32	25-23/32	27-15/32	75-5/64	77-3/4	11/16	5-39/64	7-1/32	13-1/2	4	59-21/32	
FLEETWOOOD SEVENTY-FIVE	47-13/64	46-13/64	55-1/8	54-25/32	25-23/32	27-15/32	93-37/64	77-3/4	11/16	5-39/64	7-1/32	13-1/2	4	59-21/32	
COMMERCIAL	47-13/64	46-13/64	55-1/8	54-1/2	25-23/32	27-15/32	101-13/32	74-1/4		5-39/64	7-1/32	6-23/32	2-15/32	62-11/16	11/16

Fig. 2-2 Frame Checking Points (Except Eldorado)

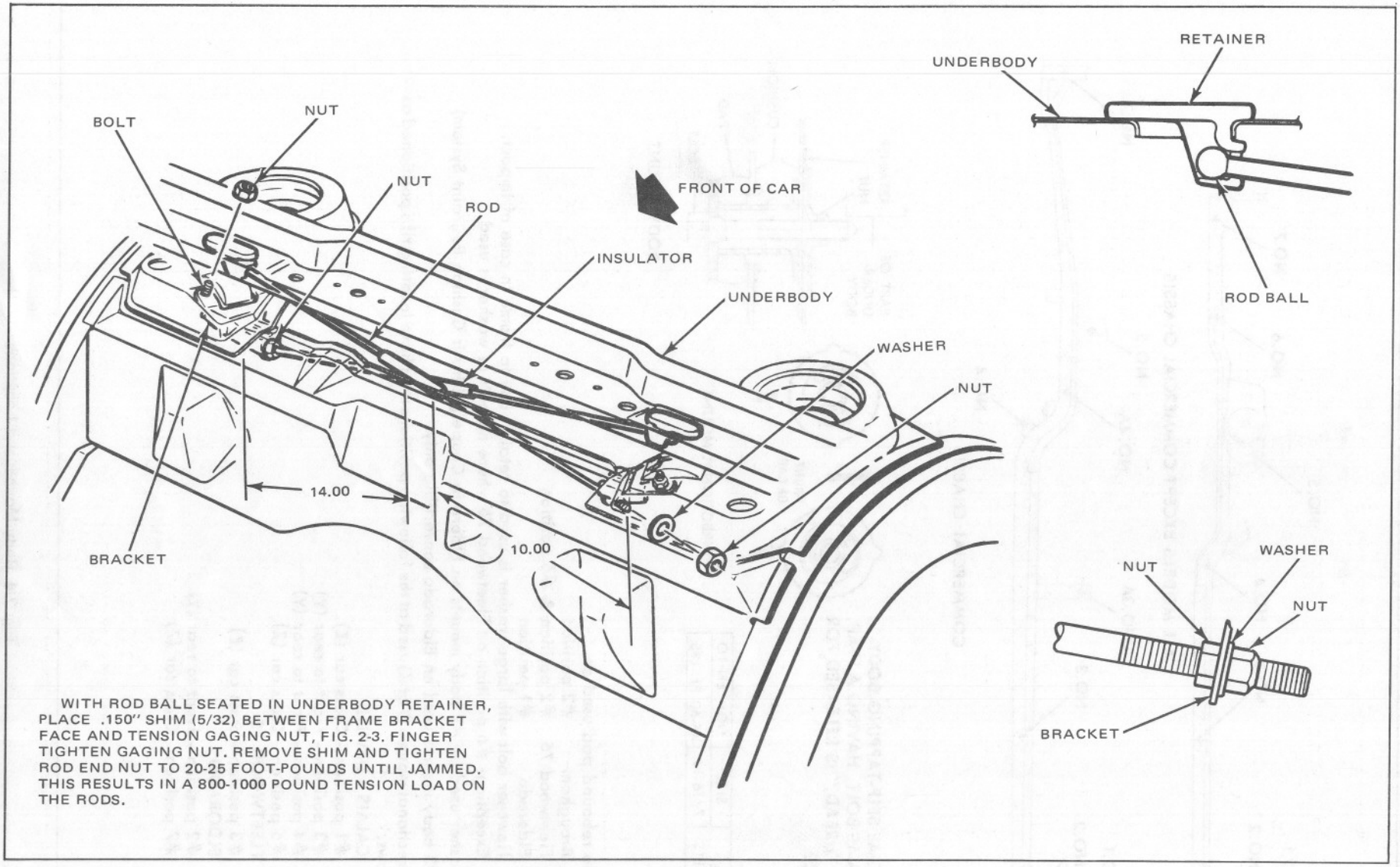
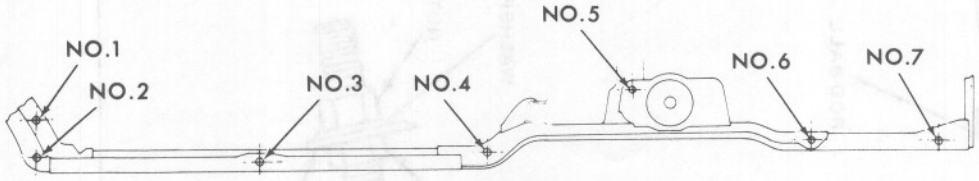
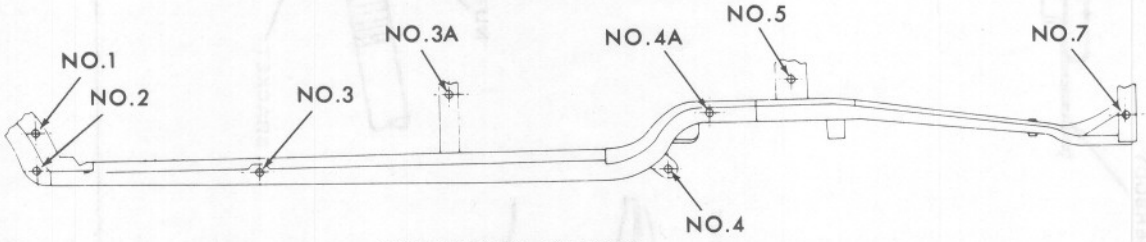


Fig. 2-3 Body to Frame Cross Rods

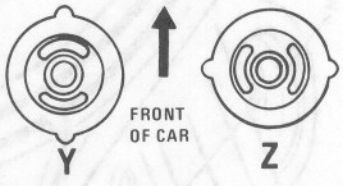


ALL MODELS EXCEPT COMMERCIAL CHASSIS

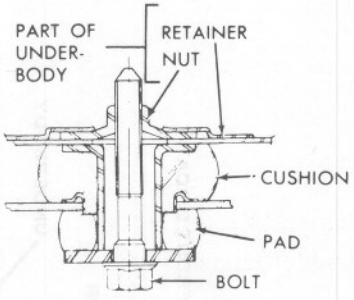


COMMERCIAL CHASSIS

A SPECIAL SELF-TAPPING BODY-TO-FRAME BOLT, HAVING A "TAP TIGHT THREAD," IS RELEASED FOR SERVICE.



DIRECTIONAL MOUNT



BODY MOUNT

ALL BOLTS	SIZE	TIGHTEN TO
	7/16-14	45-60 FT. LBS.

* No rebound pad used on
Brougham #2 position
Fleetwood 75 #2 position & #6 position
Eldorado #1 position
However bolt with large washer is used to retain body to frame in case of impact.
Exception: #6 position on Fleetwood 75 where no bolt or washer is used.

★Washer used at #2 body mounts on Eldorado Coupe (with Air Cushion Restraint System)

★ #3 body mounts used on Eldorado convertible only.

★ Directional mounts (Y or Z) used at the following positions must have locating ribs positioned as follows:

CALAIS - DEVILLE
#1 position - Cross car (Z)
#3 position - Front to rear (Y)
#4 position - Front to rear (Y)
#5 position - Cross car (Z)
FLEETWOOD 75
#3 position - cross car (Z)
ELDORADO
#2 position - Front to rear (Y)
#7 position - Cross car (Z)

Fig. 2-4 Body Mounts and Locations

GENERAL DESCRIPTION

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

Front Suspension System (Fig. 3-1)

a. Spherical Joints

The upper and lower spherical joints are equipped with lubrication fittings. Refer to Section 0 for the lubrication schedule.

b. Stabilizer Bar

There are three different diameter stabilizer bars. The same mounting brackets and bushings fit all three bars. On "C"-cars only, the spacer washers are not used between the new mounting brackets and frame.

c. Shock Absorbers

The shock absorbers have internal valving changes.

d. Torsion Bar (Eldorado only) (Fig. 3-2)

On cars equipped with the Air Cushion Restraint System, a safety pin and retainer is used at each end of the torsion bar crossmember through the pad, retainer and lower spacer plates. These pins must be removed before the crossmember can be moved from the mounted location.

e. The final drive ratio is 2.73:1.

The special drive axle joint lubricant is Part No. 780 5942 or equivalent.

f. The front standing heights have been revised, Fig. 3-3.

SERVICE INFORMATION

1. Front Wheel Stud Replacement (C-Car) (Off Car)

a. Removal

(NOTE: Optional tool J-22292-1 may be used for this application. Either tool must be modified by cutting 1/4" off the end of each leg.)

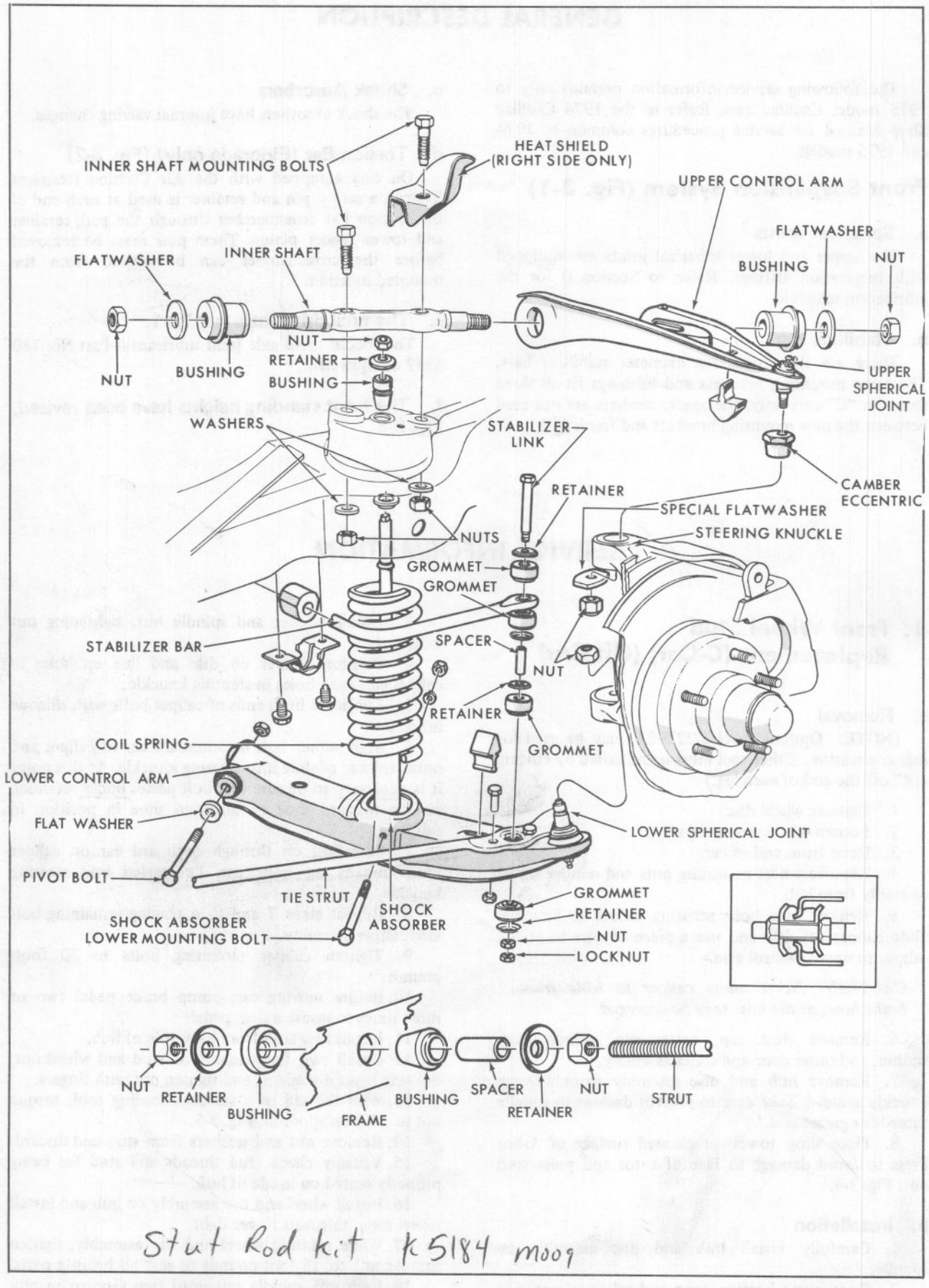
1. Remove wheel disc.
2. Loosen wheel mounting nuts.
3. Raise front end of car.
4. Remove wheel mounting nuts and remove wheel assembly from hub.
5. Remove two bolts securing caliper to knuckle. Slide caliper off disc and use a piece of wire to attach caliper to upper control arm.

CAUTION: Never allow caliper to hang from brake hose, as the hose may be damaged.

6. Remove dust cap, cotter pin, spindle nut, washer, and outer cone and roller assembly.
7. Remove hub and disc assembly from steering knuckle spindle. Take care to prevent damage to spindle threads or grease seal.
8. Place shop towel on cleaned surface of Arbor Press to avoid damage to face of rotor and press stud out, Fig. 3-4.

b. Installation

1. Carefully install hub and disc assembly on spindle.
2. Place outer bearing cone and roller assembly in outer bearing cup.
3. Install washer and spindle nut, tightening nut with fingers.
4. Position caliper on disc and line up holes in caliper ears with holes in steering knuckle.
5. Lubricate both ends of caliper bolts with silicone lubricant.
6. Start either bolt into inboard ear of caliper and outboard ear of shoe into steering knuckle. At this point it is necessary to be sure that bolt passes under retaining ear on inboard shoe to maintain shoe in position in caliper.
7. Pass bolt on through outboard ear on caliper until threads on bolts can be started into steering knuckle.
8. Repeat steps 7 and 8 in placing remaining bolt into caliper assembly.
9. Tighten caliper mounting bolts to 30 foot-pounds.
10. Before moving car, pump brake pedal two or three times to insure a firm pedal.
11. Install new stud from back side of hub.
12. Install two flat washers on stud and wheel nut, flat side toward washers, and tighten nut with fingers.
13. With the aid of a suitable holding tool, torque nut to 140 foot-pounds, Fig. 3-5.
14. Remove nut and washers from stud and discard.
15. Visually check stud threads and stud for being properly seated on inside of hub.
16. Install wheel and tire assembly on hub and install wheel mounting nuts finger tight.
17. While rotating wheel and tire assembly, tighten spindle nut to 15 foot-pounds to seat all bearing parts.
18. Back off spindle nut until free (approximately one flat) then retighten until nut is finger tight.



Stut Rod kit k5184 moog

Fig. 3-1 Front Suspension Disassembled

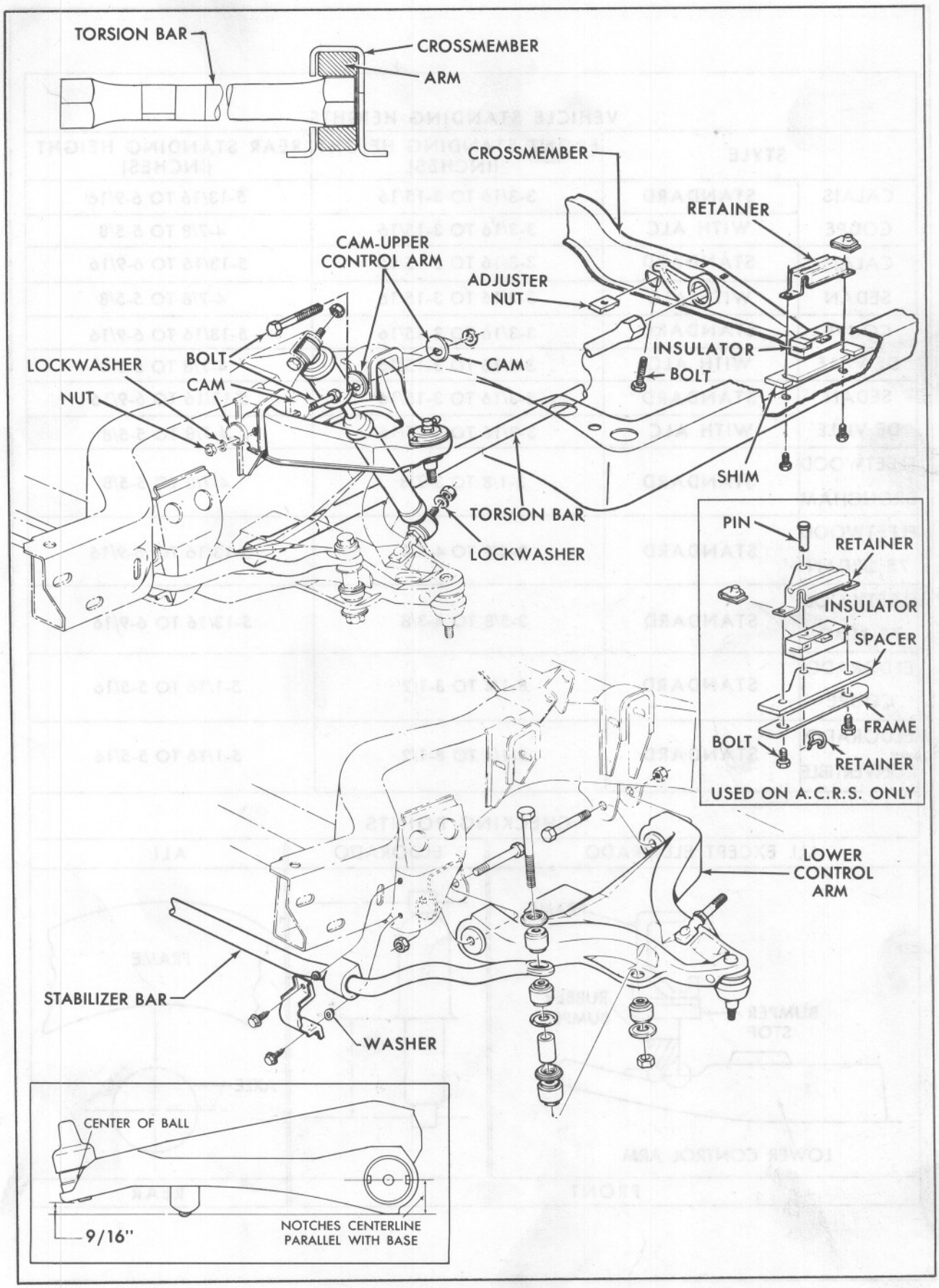
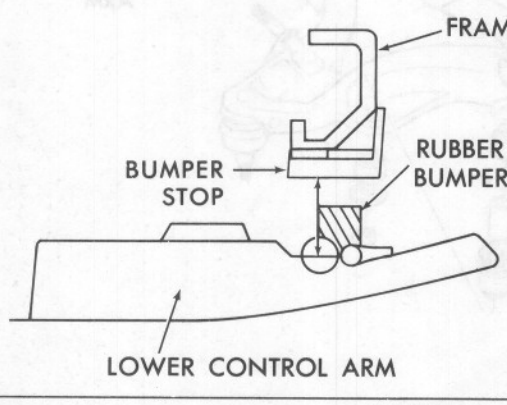


Fig. 3-2 Front Suspension Eldorado - Disassembled

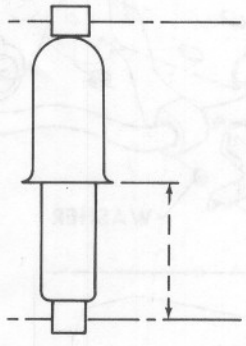
VEHICLE STANDING HEIGHTS			
STYLE		FRONT STANDING HEIGHT (INCHES)	REAR STANDING HEIGHT (INCHES)
CALAIS COUPE	STANDARD	3-3/16 TO 3-15/16	5-13/16 TO 6-9/16
	WITH ALC	3-3/16 TO 3-15/16	4-7/8 TO 5-5/8
CALAIS SEDAN	STANDARD	3-3/16 TO 3-15/16	5-13/16 TO 6-9/16
	WITH ALC	3-3/16 TO 3-15/16	4-7/8 TO 5-5/8
COUPE DE VILLE	STANDARD	3-3/16 TO 3-15/16	5-13/16 TO 6-9/16
	WITH ALC	3-3/16 TO 3-15/16	4-7/8 TO 5-5/8
SEDAN DE VILLE	STANDARD	3-3/16 TO 3-15/16	5-13/16 TO 6-9/16
	WITH ALC	3-3/16 TO 3-15/16	4-7/8 TO 5-5/8
FLEETWOOD BROUGHAM	STANDARD	3-1/8 TO 3-7/8	4-7/8 TO 5-5/8
FLEETWOOD 75 SEDAN	STANDARD	3-5/8 TO 4-3/8	5-13/16 TO 6-9/16
FLEETWOOD 75 LIMO	STANDARD	3-5/8 TO 4-3/8	5-13/16 TO 6-9/16
ELDORADO COUPE	STANDARD	8-1/4 TO 8-1/2	5-1/16 TO 5-5/16
ELDORADO CONVERTIBLE	STANDARD	8-1/4 TO 8-1/2	5-1/16 TO 5-5/16

CHECKING POINTS

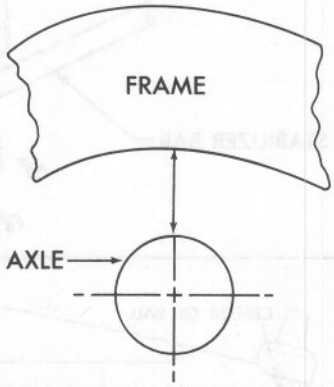
ALL EXCEPT ELDORADO



ELDORADO



ALL



FRONT REAR

Fig. 3-3 Checking Standing Heights

Fig. 3-4 Removing Stud with Arbor Press

19. Install new cotter pin. If pin cannot be installed at finger tight position, back off nut until holes line up and install pin.

20. Spread cotter pin and bend back around sides of nut. Install dust cap and make sure ends of cotter pin do not interfere with dust cap.

CAUTION: Cotter pin must be tight after installation. If pin can be moved with finger, remove pin and install another new cotter pin.

21. Install wheel assembly on hub.

22. Install wheel mounting nuts, Torque to 100 foot-pounds.

CAUTION: This fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

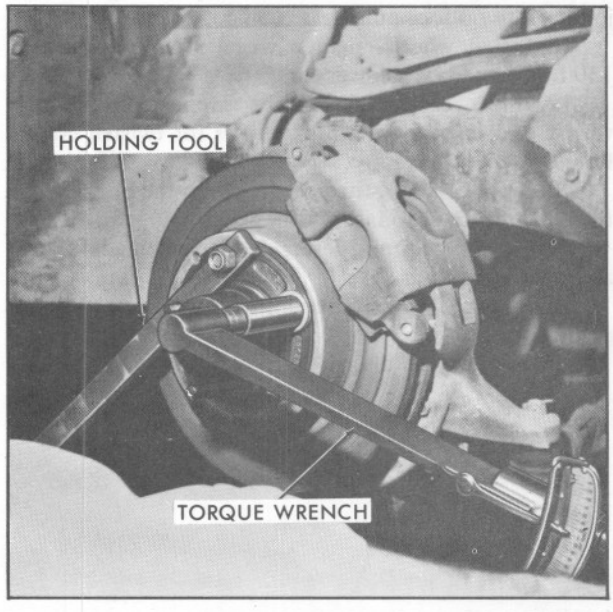


Fig. 3-5 Installing Stud (C-Car Front)

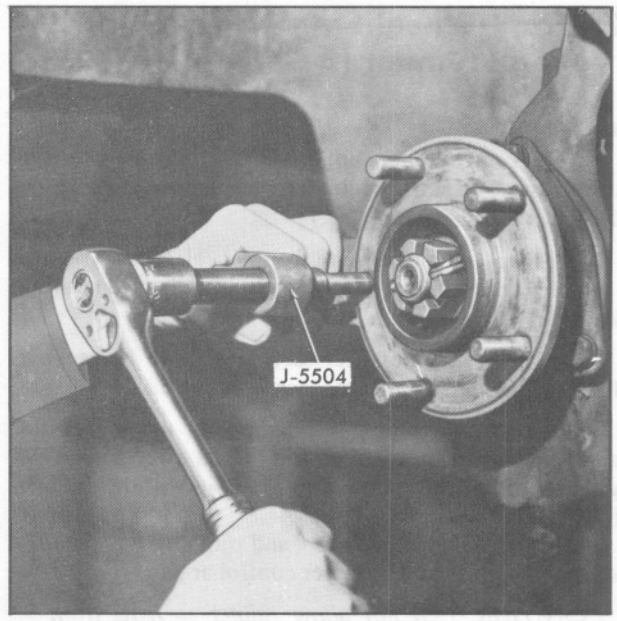


Fig. 3-6 Removing Stud (E-Car Front)

23. Drive car around several blocks making left hand and right hand turns.

24. Re-torque wheel mounting nuts to 100 foot-pounds.

25. Install wheel disc.

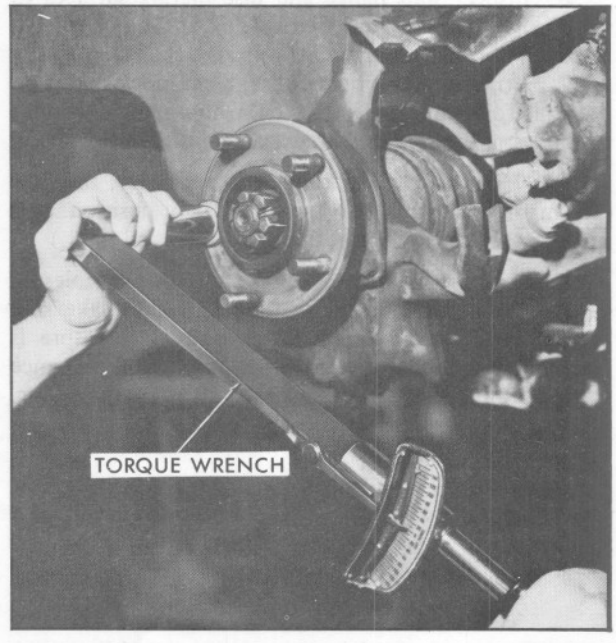


Fig. 3-7 Installing Stud (E-Car Front)

2. Front Wheel Stud Replacement (E-Car)

a. Removal

(NOTE: Optional tool J-22292-1 may be used for this application. Either tool must be modified by cutting 1/4" off the end of each leg.)

1. Raise car and remove front wheel.
2. Remove two bolts which hold caliper to steering knuckle.

(NOTE: It is not necessary to remove brake hose from caliper when removing disc for service.)

3. Remove cotter pin, loosen joint upper ball nut and slip brake hose collar out of its clip. The slack gained will permit removal of caliper without pulling hose.
4. Slide caliper off disc and support by a hook-shaped wire fastened to upper control arm.

CAUTION: Do not allow caliper to hang from brake hose as this could result in possible damage to hose.

5. Mark a wheel stud and a corresponding place on the disc to assist in installation.
6. Remove the disc by sliding it off the hub.
7. Install tool J-5504 on damaged stud and press stud from hub, Fig. 3-6.

b. Installation

1. Install a new stud from back side of hub.
2. Install two flat washers on stud and wheel nut, flat side toward washers, and tighten nut with fingers.
3. Torque nut to 140 foot-pounds, Fig. 3-7.
4. Remove nut and washers from stud and discard.
5. Visually inspect stud threads and stud head for being properly seated on hub flange.
6. Inspect hub flange and disc mating surfaces to make sure that they are free of dirt and other foreign material. Clean as required.
7. If reinstalling original disc, align index marks on hub and disc and slide disc over hub pilot diameter, making sure that disc is seated against hub flange.

(NOTE: If disc replacement is necessary, the new disc may be assembled to the hub in any position. It is not necessary to replace both discs if one is all right.)

8. Position caliper on disc and line up holes in caliper ears with holes in steering knuckle. Make sure brake hose is not twisted, as its natural curvature is essential to maintain proper hose-to-suspension clearance through full movement of suspension and steering parts.
9. Wipe all dirt and corrosion from the caliper mounting bolts. Do not use abrasives, as they will remove protective plating. Lubricate smaller ends of bolts with silicone lubricant.
10. Start either bolt into the inboard ear of the caliper and into the steering knuckle. At this point it is necessary to be sure that the bolt passes under the retaining ear on the inboard shoe to maintain the shoe in position in the caliper.
11. Pass the bolt on through the outboard ear on the caliper until the threads on the bolt can be started into the steering knuckle.
12. Repeat steps 10 and 11 in placing remaining bolt into caliper assembly.

See CAUTION when performing steps 13, 17 and 18.

CAUTION: This fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

13. Tighten caliper mounting bolts to 30 foot-pounds.
14. Pump brake pedal to seat lining against rotors.
15. Clinch upper ears of outboard shoe by positioning 12" pliers with one jaw on top of upper ear and one jaw in notch on bottom of shoe, opposite upper ear.

(NOTE: After clinching, there should be no radial clearance between the shoe ears and caliper housing.)

16. If radial clearance exists, repeat clinching procedure.
17. Center brake hose collar in clip and tighten ball joint nut to 60 foot-pounds. Install cotter pin.
18. Install wheels, tighten wheel mounting nuts to 130 foot-pounds and lower car.
19. Allow car weight to be supported on front wheels and inspect from brake hoses for twisted condition. Correct if necessary.
20. Before moving the vehicle, pump the brake pedal two or three times to insure firm pedal.
21. Drive car around several blocks making left hand and right hand turns.
22. Re-torque wheel mounting nuts to 130 foot-pounds.
23. Install wheel disc.

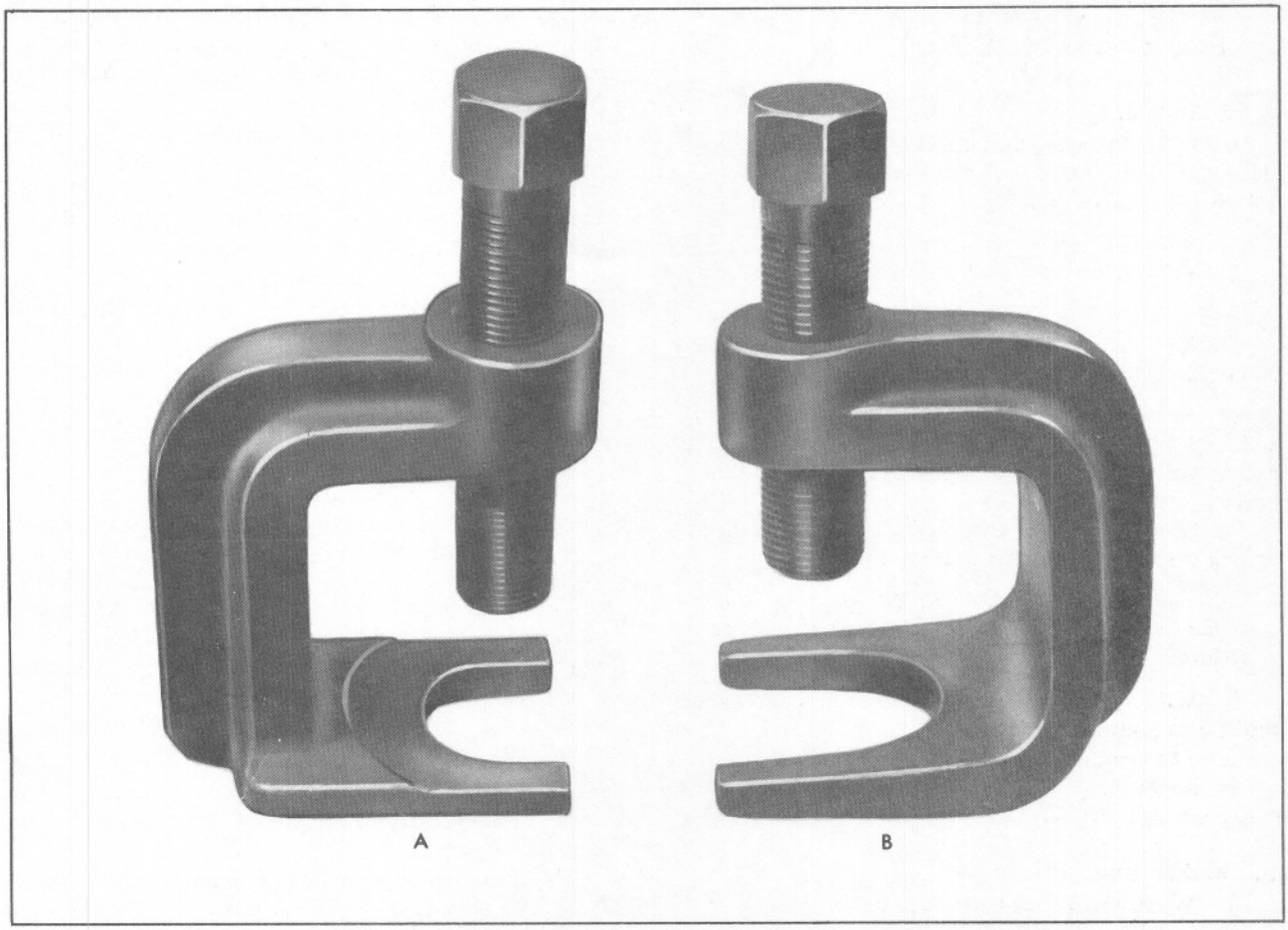


Fig. 3-8 Special Tools

Key	Tool No.	Name	Key	Tool No.	Name
A	J-5504	Stud Remover	B	J22292-1	Steering Linkage Puller

Key	Tool No.	Description	Key	Tool No.	Name
A	2551M	Strut Remover	B	0307521	Steering Linkage Puller

GENERAL DESCRIPTION

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

a. Shock Absorbers

Shock absorbers have modified internal valving.

b. Automatic Level Control

The leveling compressor uses a smaller (quicker recovery) reservoir (tank) on the air leveling system.

c. Propeller Shaft

The ball support yoke flange to pinion flange lock washers are eliminated.

The Limousine and Commercial chassis propeller shaft center bearing support to frame bolt retainer has been cancelled. The lock washer and nut are replaced with a hex-lock nut. Nut torque is 18 Foot-Pounds.

d. Differential

The axle ratio on all rear drive cars except Fleetwood Seventy-fives and the Commercial Chassis is 2.73:1. The 3.15:1 ratio is standard on Fleetwood Seventy-fives and the Commercial Chassis.

e. Wheel Bearings (Eldorado only)

The rear wheel bearing inner seal is changed from felt to molded rubber. It can be used in place of the old seal.

f. The rear standing heights have been revised. See Section 3, Fig. 3-3.

g. The rear stabilizer bar has been eliminated on Eldorados.

SERVICE INFORMATION

1. Rear wheel stud replacement (C-car)

a. Removal

(NOTE: Optional tool J-22292-1 may be used for this application. Either tool must be modified by cutting 1/4" off the end of each leg.)

1. Remove rear wheel shield and wheel disc.
2. Loosen wheel mounting nuts.
3. Raise rear end of car and place jack stands under rear frame rails.
4. Remove wheel mounting nuts and remove wheel. (Remove wheel spacer on Commercial Chassis.)
5. Remove push nut securing brake drum to axle shaft flange. (Push nut is not used on Commercial series cars.)
6. Remove brake drum.
7. Install tool J-5504 on damaged stud and press stud from axle shaft flange, Fig. 4-1.

b. Installation

1. Insert new stud from back side of axle shaft flange.
2. Install two flat washers on stud and wheel nut, flat side toward washers, and tighten nut with fingers.
3. Torque nut to 140 foot-pounds, Fig. 4-2.

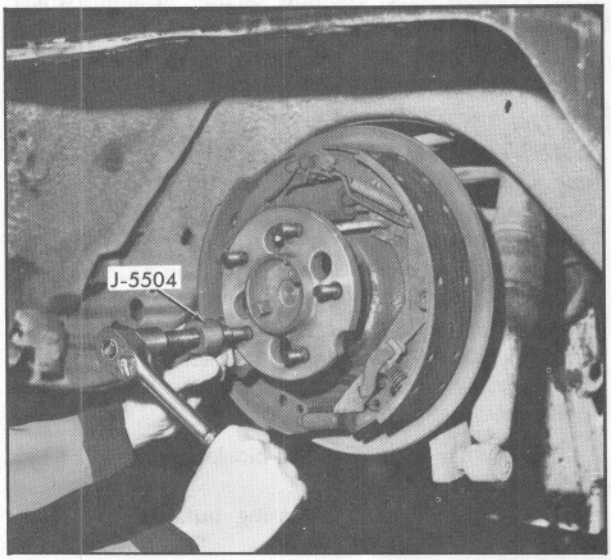


Fig. 4-1 Removing Stud (C-Car Rear)

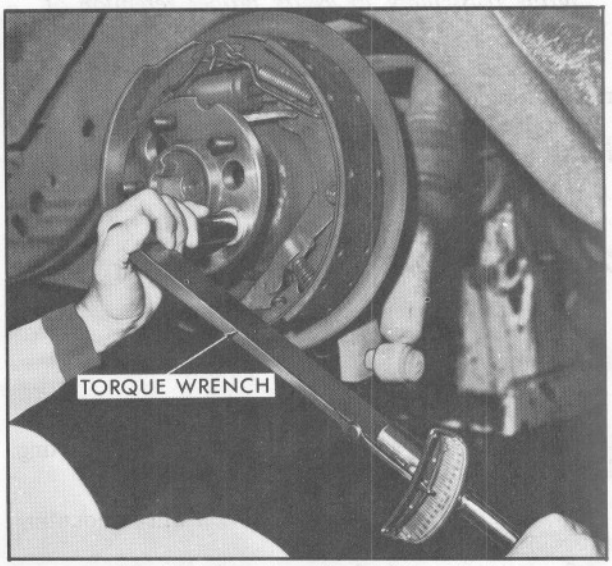


Fig. 4-2 Installing Stud (C-Car Rear)

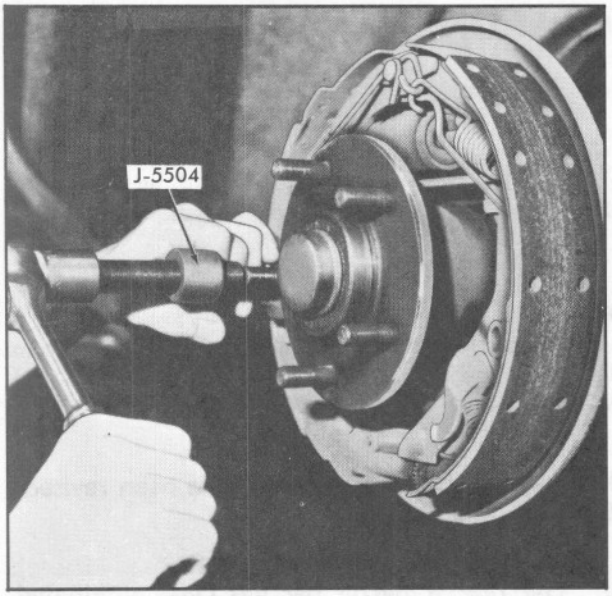


Fig. 4-3 Removing Stud (E-Car Rear)

4. Remove nut and washers from stud and discard.
5. Visually check stud threads and stud to make certain they are properly seated on inside of axle shaft flange.
6. Install brake drum.
7. Install one push nut securing brake drum to axle shaft flange, except on Commercial Chassis. (Install wheel spacer on Commercial Chassis.)
8. Install wheel and replace wheel mounting nuts.
9. Remove jack stands, lower car, and tighten wheel mounting nuts to 100 foot-pounds.

CAUTION: This fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

10. Drive car around several blocks making left and right turns.
11. Re-torque wheel mounting nuts to 100 foot-pounds.
12. Install wheel disc and wheel shield.

2. Rear Wheel stud replacement (E-car)

a. Removal

(NOTE: Optional tool J-22292-1 may be used for this application. Either tool must be modified by cutting 1/4" off the end of each leg.)

1. Remove wheel disc and loosen wheel mounting nuts.
2. Raise rear end of car.

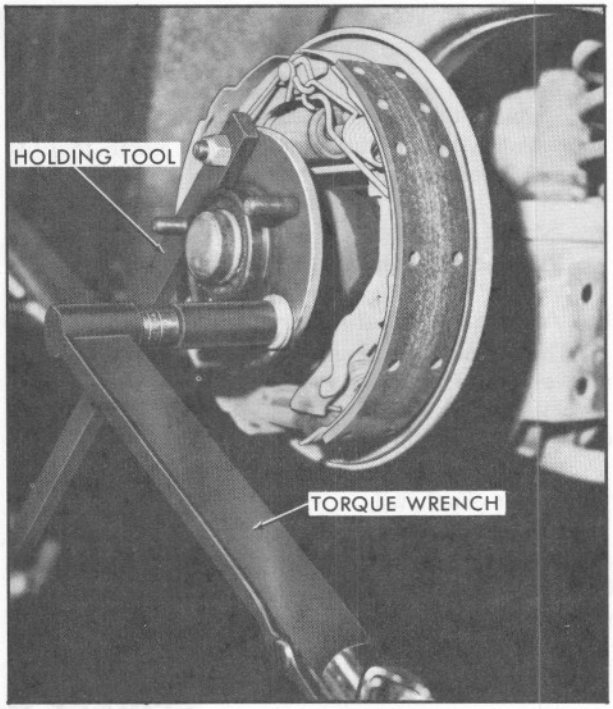


Fig. 4-4 Installing Stud (E-Car Rear)

3. Remove wheel and tire assembly and brake drum.
4. Install tool J-5504 on damaged stud and press stud from hub, Fig. 4-3.

b. Installation

1. Install a new stud from back side of hub.
2. Install two flat washers on stud and wheel nut, flat side toward washers, and tighten nut with fingers.
3. Torque nut to 140 foot-pounds.
4. Remove nut and washers from stud and discard.
5. Visually check stud threads and stud to make certain they are properly seated on inside of hub.
6. Install rear brake drum.
7. Position wheel assembly on hub, installing wheel mounting nuts finger tight.
8. Lower car.
9. Tighten wheel mounting nuts to 130 foot-pounds.

CAUTION: This fastener is an important attaching part in that it could affect the performance of vital components and systems, and/or could result in major repair expense. It must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of this part.

10. Drive car around several blocks making left hand and right hand turns.
11. Re-torque wheel mounting nuts to 130 foot-pounds.
12. Install wheel disc.

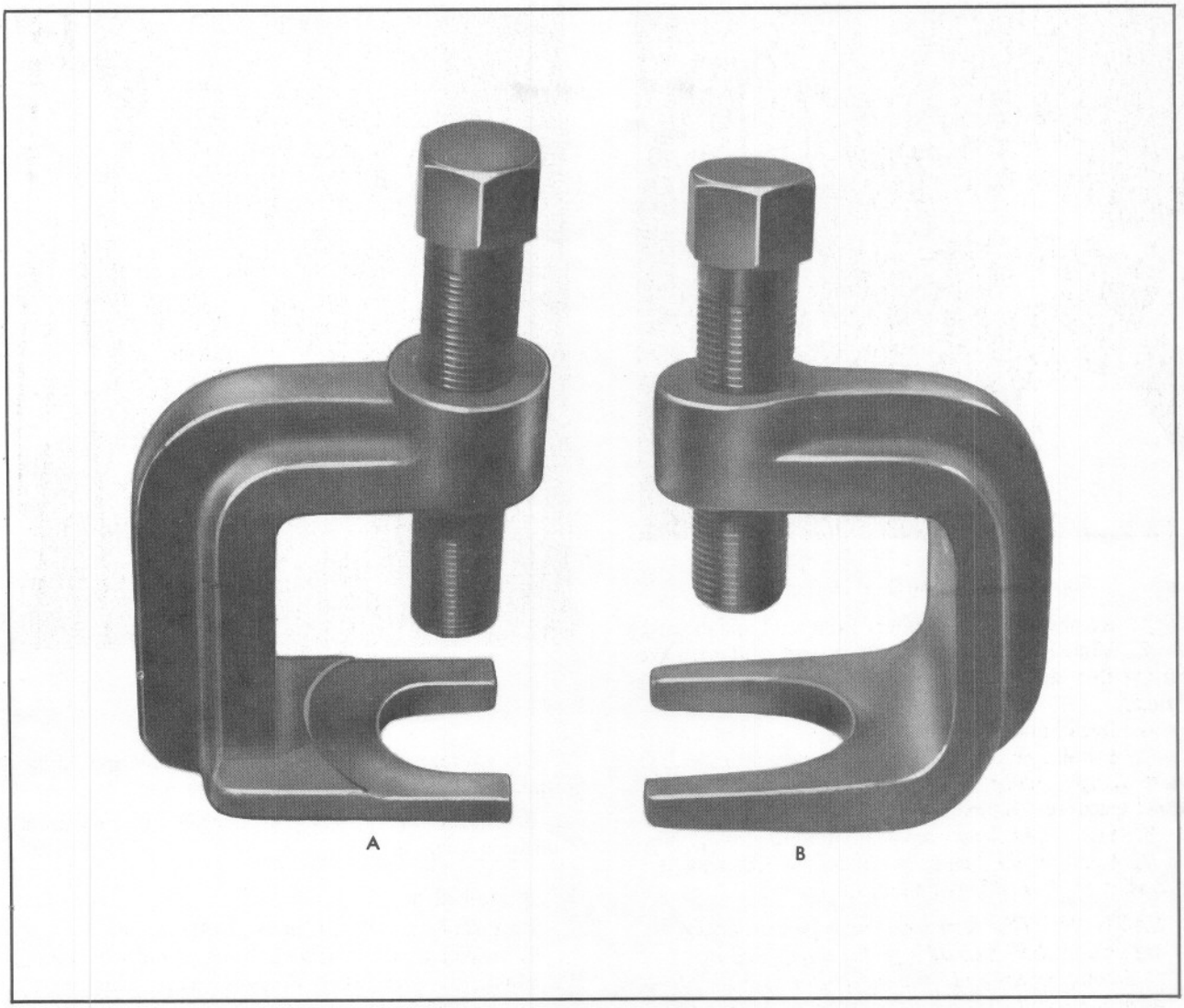


Fig. 4-5 Special Tools

Key	Tool No.	Name	Key	Tool No.	Name
A	J-5504	Stud Remover	B	J-22292-1	Steering Linkage Puller

Key	Tool No.	Name	Key	Tool No.	Name
A	1-22014	Strut Remover	B	1-22272-2	Steering Gear Arm Puller

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

THEORY OF OPERATION

The Brake System is very similar to the 1974 Cadillac. Single Piston sliding caliper Disc Brakes are used at the front wheels while drum brakes are used at the rear wheels.

The system includes a dual master cylinder with a tandem diaphragm vacuum power assist unit. A combination valve incorporates the metering valve, proportioning valve and pressure differential switch into one part.

The foot actuated parking brake mechanically applies the rear drum brakes. The parking brake is released automatically by engine vacuum when the engine is running and the transmission selector is placed in any position other than neutral or park.

Brake Combination Valve—Eldorado (Fig. 5-1)

The metering valve front brake cut in pressure has been reduced to 75 psi on the Eldorado only. The appearance and service operations on the combination valve remain unchanged.

CAUTION: *When using a bleeder ball to check metering valve operation do not exceed 40 psi. Higher pressures could lead to inaccurate test results.*

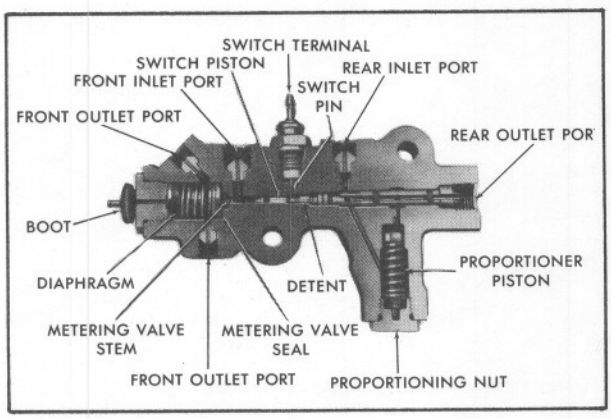


Fig. 5-1 Brake Combination Valve

Shoe and Lining Assemblies (Fig. 5-2)

The front disc brake outer shoe and lining assemblies have an insulator attached to the shoes. The function of the insulator is to reduce brake squeak.

Rear Brake Pipes

Rear Brake Pipes are of a new stainless steel sandwich design.

Track Master Controller (Except ACRS)

The Track Master Controller is mounted directly to the top of the glove box liner on all except ACRS equipped cars.

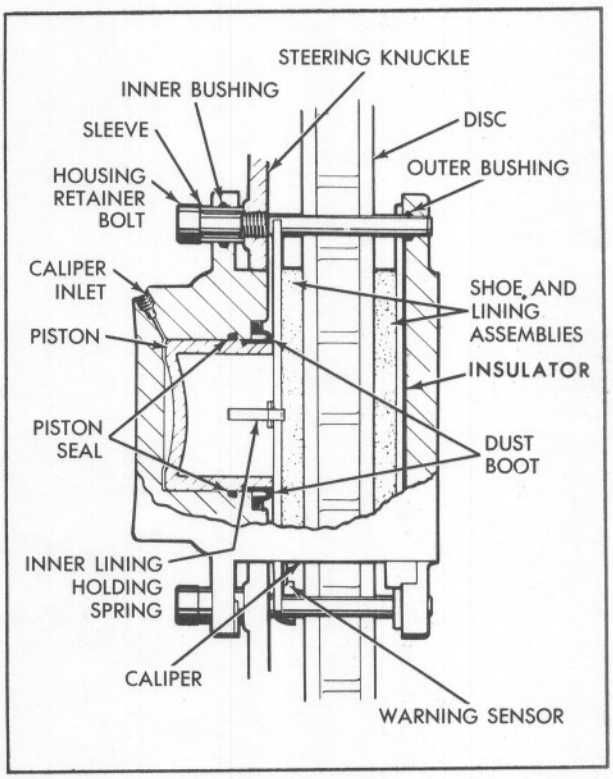


Fig. 5-2 Outer Shoe and Lining Insulator

GENERAL DESCRIPTION

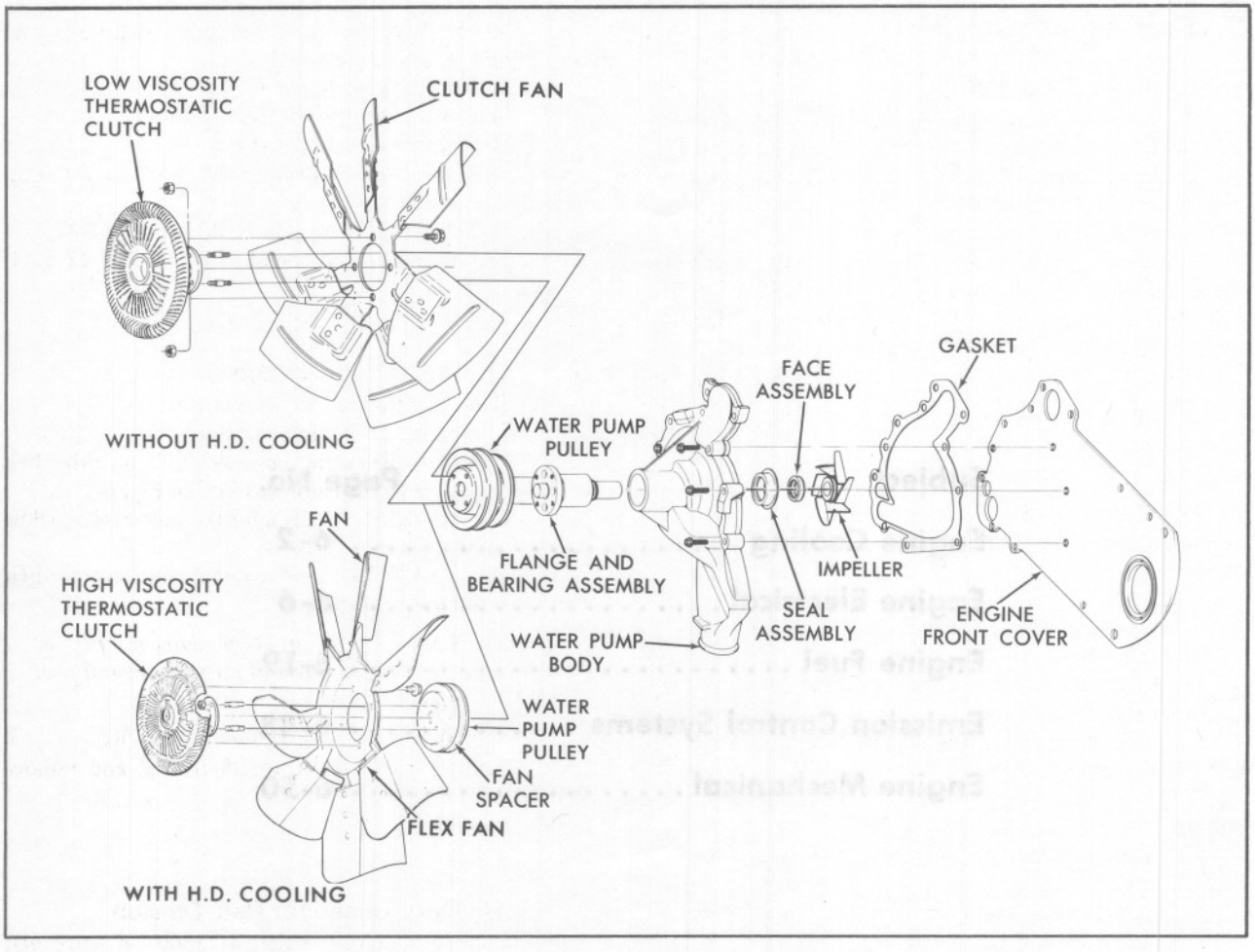


Fig. 6-1 Water Pump Disassembled

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

1. 1975 Cooling System Changes

The following 1975 changes effect the operation of the cooling system.

a. A new 3-tube radiator, 3 1/2 inches wider than previous designs is used on all 1975 cars. The 75 series and Commercial Chassis radiator is the same as other cars except for a three plate transmission cooler.

b. The radiator cradle is also 3 1/2 inches wider to accomodate the new radiator.

c. A seven bladed fixed blade fan with clutch is used on all cars without heavy duty cooling (Option V0I) except commercial chassis and Limousine, Fig. 6-1.

d. A seven bladed flex fan with clutch is used for heavy duty cooling (Option V0I) and all commercial chassis-Limousine applications, Fig. 6-1.

e. Four fan clutches are used to meet the cooling requirements of 1975 cars. A low viscosity fluid is used for the standard cooling system in both Cadillac cars and Eldorados. High viscosity fluid clutch is used for heavy duty (Option V0I) and commercial chassis-Limousine applications. The fan clutch shaft used on Eldorados is 1/4" longer.

f. A new arrangement of the engine drive belts is shown in Fig. 6-2.

SERVICE INFORMATION

2. Belt Adjustments

a. Checking Drive Belts.

1. Drive belts should be checked for signs of wear, cuts, and fraying. Deteriorated belts should be replaced.
2. Place Belt Tension Gage, J-23600 midway between pulleys on drive belt being checked, locations A,B,C or D indicated in Fig 6-2.
3. Check gage reading for belt being checked. Proper belt tension is shown in the table on Page 6-5. If belt tension is incorrect, adjust specific belt according to the corresponding procedure described in b, c, d, or e of this note.

(NOTE: A belt that has been previously tensioned is considered a used belt. A belt that has never been tensioned is considered a new belt.)

4. If, after tensioning, a belt fails to maintain the minimum tension specified in chart, it should be replaced.

b. Generator Belt Tension (Except H.D. Generator)

1. Place Belt Tension Gage, J-23600 on drive belt midway between pulleys at location A in Fig. 6-2.
2. Loosen generator link adjusting screw and pivot screw under generator.
3. Move generator as required until correct belt tension is obtained on gage.
4. Tighten generator link adjusting screw to 20 foot-pounds.
5. Tighten pivot screw under generator to 28 foot-pounds and remove Belt Tension Gage.

c. Power Steering Pump and/or Air Conditioning Compressor Belt Tension

1. Place Belt Tension Gage, J-23600 on drive belt midway between pulleys at location "B" in Fig. 6-2.
2. Loosen, (1) steering pump adjusting nut at top of pump mounting bracket, (2) lower adjusting slot bolt, and (3) pivot bolt.
3. Move power steering pump as required until correct belt tension is obtained on gage.
4. Snug lower adjusting slot bolt.
5. Snug lower pivot bolt.
6. Snug upper adjusting slot nut.
7. Tighten lower adjusting slot bolt to 30 foot-pounds.
8. Tighten lower pivot bolt to 30 foot-pounds.
9. Tighten upper adjusting slot nut to 22 foot-pounds.

d. A.I.R. Pump Belt Tension

1. Raise front of car.
2. Loosen A.I.R. Pump pivot bolt.
3. Place Belt Tension Gage, J-23600 on drive belt midway between pulleys at location C in Fig. 6-2.
4. Loosen A.I.R. Pump adjuster link screw below pump.
5. Move A.I.R. Pump as required until correct belt tension is obtained on gage.

CAUTION: To avoid internal damage, pry as close to rear of pump cover as possible, near dowel pin.

6. Tighten adjuster link screw to 20 ft. lbs.
7. Tighten pivot screw to 25 ft. lbs. and remove Belt Tension Gage.
8. Lower car.

e. Heavy Duty Generator Belt Tension

1. Place belt tension gage, J-23600 on drive belt midway between pulleys at location A in Fig. 6-2.
2. Loosen idler bracket adjusting and pivot bolts, Fig. 6-16.
3. Move idler pulley as required until correct belt tension is obtained on gage.
4. Tighten idler adjusting bolt to 20 foot-pounds.
5. Tighten idler pivot bolt to 28 foot-pounds and remove belt tension gage.

1975 ENGINE ACCESSORY DRIVE BELTS

Belts	Type	Tension		Width	Length
		New	Used		
A.I.R. Pump	36° Wedge	170 Lbs.	120 Lbs.	.500"	46.5"
Generator					
63 AMP	36° Wedge	100 Lbs.	70 Lbs.	.470"	37.0"
80 AMP	36° Wedge	100 Lbs.	70 Lbs.	.470"	38.5"
145 AMP	36° Wedge	170 Lbs.	120 Lbs.	.500"	57.5"
Power Steering Pump and Air Conditioning Compressor	36° Wedge	170 Lbs.	120 Lbs.	.500"	60.5"

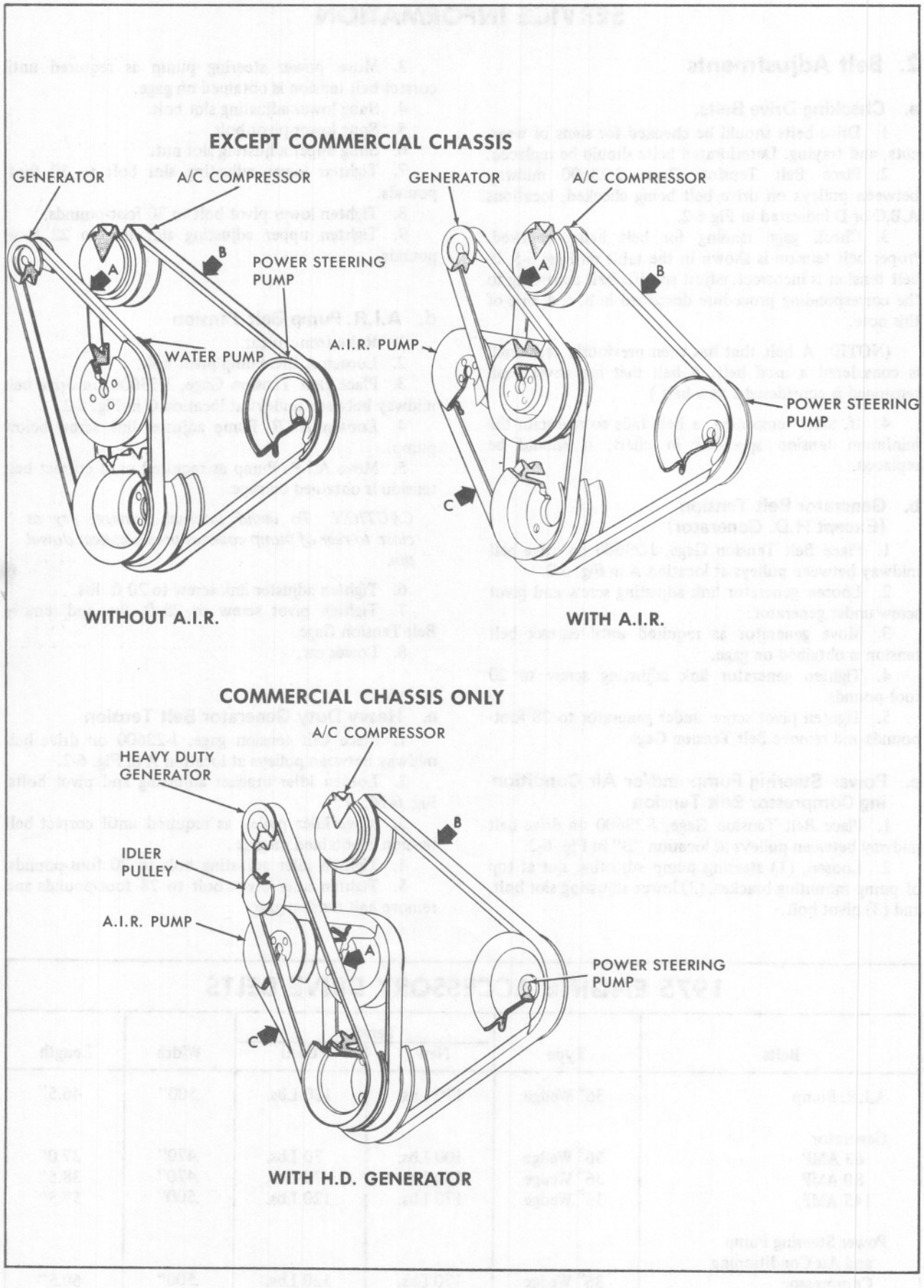


Fig. 6-2 Belt Tensioning

SPECIFICATIONS

Fan	
Number of Blades	7*
Hoses	
Type	Reinforced Molded
Inside Diameter	1.50"
Thermostat	
Starts to Open	177°F. to 182°F.
Fully Open (Approximately 1/4")	202°F.
Drive Belt Ratios	
Water Pump	1.24 to 1
Generator	
63 Amp. without A.I.R.	3.09 to 1
63 Amp. with A.I.R.	3.36 to 1
80 Amp. without A.I.R.	2.86 to 1
80 Amp. with A.I.R.	3.12 to 1
Generator–145 Amp.	2.28 to 1
Power Steering Pump	1.26 to 1
Air Conditioning Compressor	1.48 to 1
A.I.R. Pump	1.20 to 1
Capacity of System	
All Except Seventy-Five Series	23.0 Qts.
Seventy-Five Series	25.8 Qts.
Area of Core	552 Sq. In.
Core Depth	1.96 In.
Core Center Constant	.14 In.
Tubing Spacing	.55 In.
Radiator Cap Pressure	13.5 to 16.5 psi

*With Fan Clutch

GENERAL DESCRIPTION

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

3. 1975 Engine Electrical Changes

The following changes effect the operation or performance of the 1975 electrical system.

a. A smaller and lighter plastic cased battery is used as original equipment in all 1975 cars. At time of replacement the conventional rubber cased battery must be used.

b. The method of retaining the battery in position to the right side of the new radiator cradle is by a plastic covered hold-down, Fig. 6-3.

c. The battery cable screw which fastens the cable to the battery terminal is a separate part—it is not captive in the cable.

d. The starter solenoid "R" terminal has been eliminated since it is not used with H.E.I. ignition systems.

e. A provision is made on the engine front cover for using probe type ignition timing equipment.

f. The 40 ohm resistor in parallel with the indicator lamp is now located inside the generator. This change requires some revision in the generator diagnosis procedure, Note 9.

g. 1975 generators incorporate a larger diameter rotor shaft which necessitates some specific parts when rotor replacement is required. See Note 11.

h. The 1975 generator incorporates a 1-1/2 mfd capacitor to reduce generator noise audible in the radio. This replaces a 1/2 mfd capacitor previously used.

4. Engine Tune-Up

The tune-up procedures listed in this section should be performed at the time or mileage intervals specified in the 1975 Cadillac Maintenance Schedule presented in Section 0.

5. Ignition Timing Adjustment

Ignition timing on 1975 engines may be adjusted by either of two methods; 1. with conventional strobe light timing equipment or, 2. with a probe type timing advance meter. Both methods are described in this note.

a. Strobe Light Timing

1. Adjust distributor clamp nut to allow distributor to be turned by hand, but without excessive looseness.

2. Disconnect vacuum advance unit hose at distributor and place a piece of tape over end of hose. This is important, as a manifold leak will affect timing adjustments.

3. Insert a timing light adapter between the number 1 spark plug and its lead wire.

(NOTE: If spark plug adapters are not available disconnect number 1 spark plug wire and connect timing light to plug lead. Time engine on seven cylinders. Do not force pins or wires thru spark plug wire nipple.)

4. Connect a suitable timing light to adapter.

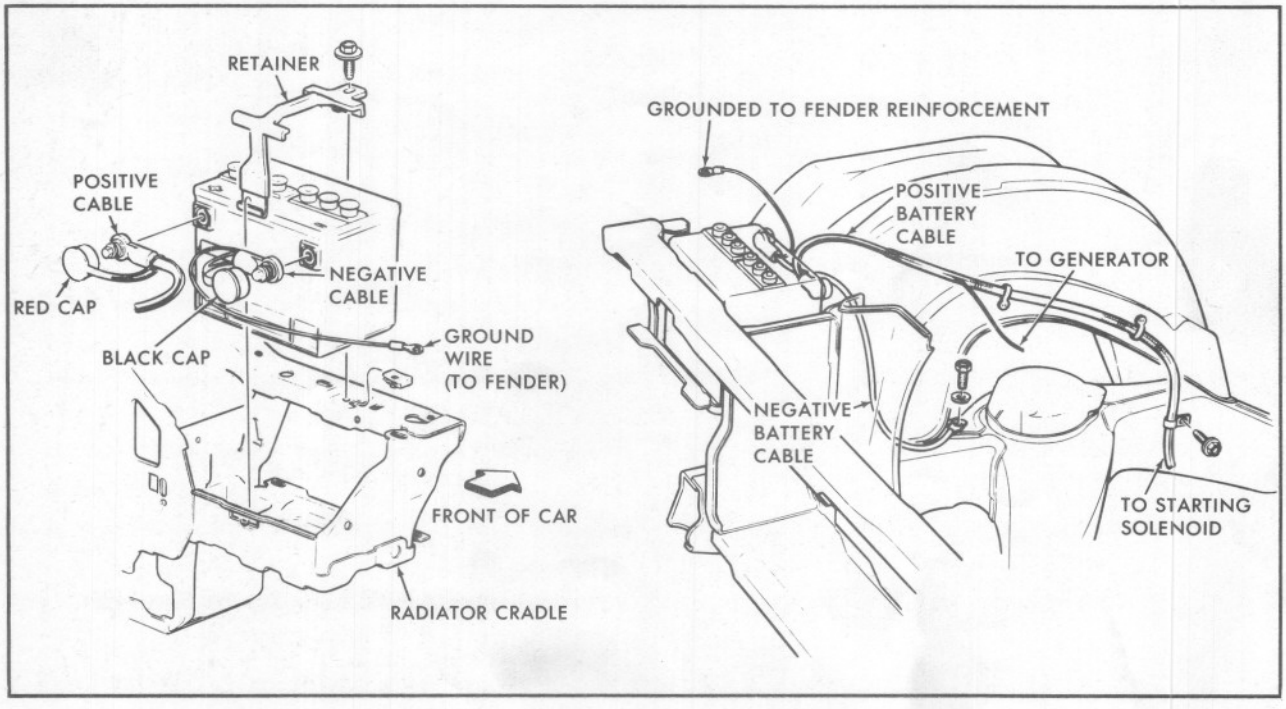


Fig. 6-3 Battery and Cables

(NOTE: Make sure that timing marks and scribe marks are clean.)

5. Disconnect and plug A.L.C. hose on cars so equipped.
6. Connect tachometer to engine and set parking brake securely. Place transmission selector lever in neutral or park position.
7. Start engine.
8. With idle speed at 600 rpm or less, observe timing light flashes on pulley in relation to notches on front cover. Set timing to 6 degrees before top dead center, Fig. 6-4.
9. Recheck idle speed with vacuum advance hose connected and reset to 600 RPM if required.
10. Tighten clamp nut to 18 foot-pounds, and recheck timing to make sure that it did not change.
11. Disconnect tachometer and timing light, and remove adapter from engine.

b. Timing Advance Meter

1. Adjust distributor clamp nut to allow distributor to be turned by hand, but without excessive looseness.
2. Disconnect vacuum advance unit hose at distributor and place a piece of tape over end of hose. This is important, as a manifold leak will affect timing adjustments.
3. Disconnect and plug A.L.C. hose on cars so equipped.
4. Connect power supply for timing meter to battery. Observe correct polarity, Fig. 6-4.
5. Install ignition pickup clip over No. 1 spark plug wire, Fig. 6-4. Be sure jaws are clean and locking button is pressed forward to close jaws firmly.
6. Install magnetic pickup in receptacle of timing tab and press down firmly to contact the pulley surface, Fig. 6-5.
7. Make sure that all leads to advance meter are out of way of moving parts and exhaust manifold.
8. Turn power switch ON and timing-advance switch to TIMING position.
9. Start engine.
10. With idle speed to 600 RPM or less, observe ENGINE DEGREES meter and set timing to 6° before top dead center (+ 6 degrees on meter).
11. Tighten clamp nut to 18 foot-pounds, and recheck timing to make sure that it did not change.
12. Remove tape from vacuum advance hose and connect hose to vacuum advance unit.
13. Recheck idle speed with vacuum advance hose connected and reset as required.
14. Disconnect timing advance meter connection from engine.

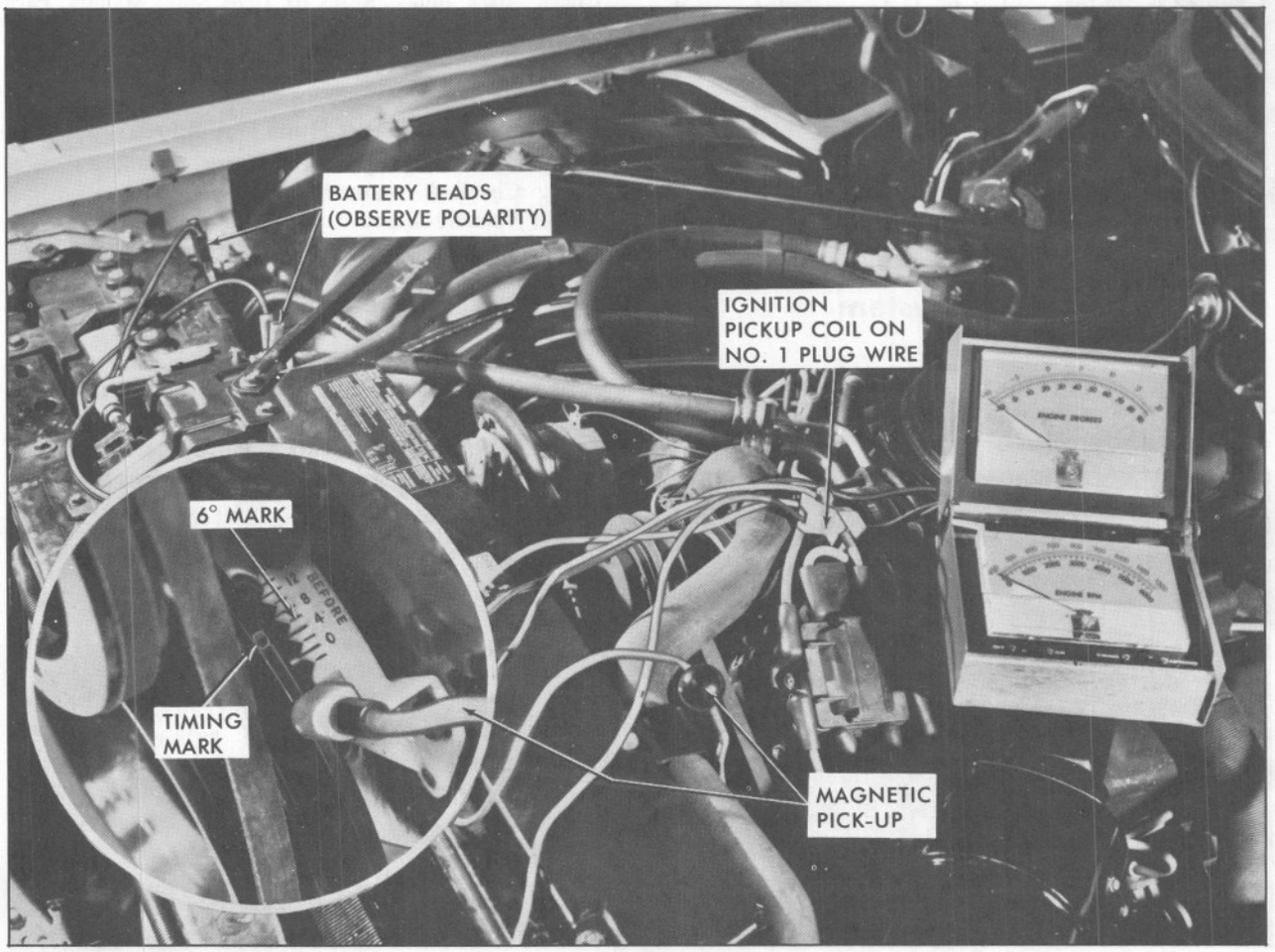


Fig. 6-4 Ignition Timing Adjustment

6. Distributor Testing

For service departments equipped with distributor testing equipment the following information on performance characteristics is provided.

ALL EXCEPT CALIFORNIA

CENTRIFUGAL ADVANCE		VACUUM ADVANCE	
Distributor RPM	Distributor Advance	Inches of Mercury	Distributor Advance
200	0° to 0°	4 1/1"	8° to 0°
330	-1/2° to 0°	5 1/2"	0° to 2°
450	-1° to 2 1/4°	8"	1° to 3°
600	-3° to 5°	11"	8° to 10°
1400	5° to 7°	15"	12 1/2° to 14 1/2°
2500	8° to 10°	16"	13 1/2° to 14 1/2°
3000	7 1/2° to 10°		

CALIFORNIA ONLY

CENTRIFUGAL ADVANCE		VACUUM ADVANCE	
Distributor RPM	Distributor Advance	Inches of Mercury	Distributor Advance
200	0° to 0°	5 1/2"	0° to 0°
330	-1/2° to 0°	6 1/2"	0° to 2°
450	-1° to 2 1/4°	8"	2° to 4°
600	3° to 5°	10"	5° to 7°
1400	5° to 7°	13"	8 1/2° to 10 1/2°
2500	8° to 10°	14"	9 1/2° to 10 1/2°
3000	7 1/2° to 10°		

7. Analyzing H.E.I. System Conditions

Careful adherence to the following procedures will lead to the location and correction of High Energy Ignition system problems.

Normally only a portion of the procedures need be performed.

Before starting the detailed procedure:

1. Make sure that wiring connector is properly attached to connector at side of distributor cap.
2. Make sure that all spark plug leads are properly connected at plugs and at distributor terminals.

Trouble in the ignition system will show up as one of the following conditions:

a. Engine will not start.
b. Engine starts but runs roughly.

a. Engine will not start

1. Connect voltmeter between "BAT" terminal lead on distributor connector and ground.
2. Turn ignition switch ON.
3. If voltage is zero, there is an open circuit in the 12 pink wire between the distributor and the bulkhead connector; or in the 12 pink wire between the bulkhead connector and the ignition switch; or in the 10 red wire between the ignition switch and the starter solenoid. Repair as required.
4. If reading is battery voltage, hold one spark plug lead with insulated pliers approximately 1/4 inch away from a dry area of engine block while cranking engine.
5. If sparking occurs, trouble is not in distributor. Check spark plugs. Refer to 1974 Shop Manual, Page 6-62 for fuel system diagnosis.
6. If sparking does not occur, proceed to Note 8.

b. Engine Starts But Runs Roughly

1. Check for proper fuel delivery.
2. Check all vacuum hoses for leakage.
3. Visually inspect and listen for sparks jumping to ground or to other plug wires.
4. Check ignition timing.
5. Check centrifugal advance mechanism for proper operation.
6. Remove all spark plugs and check for malfunctions such as improper gap, fouling, cracked insulators (inside and out), etc.
7. If no malfunctions are found, proceed to Note 8.

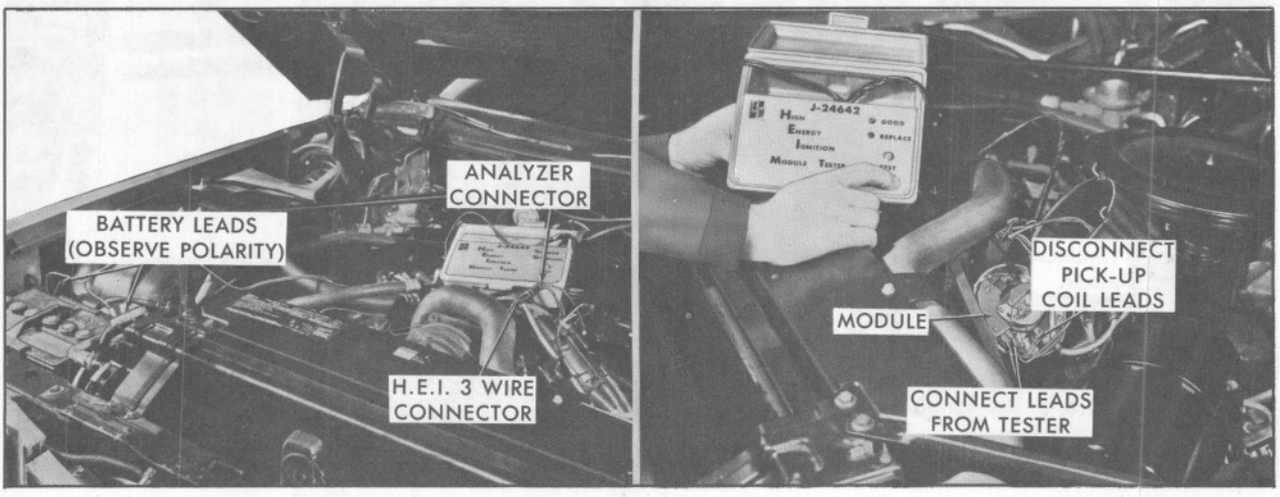


Fig. 6-5 Testing HEI Module

8. H.E.I. Component Checks

1. Disconnect 3-wire connector from distributor cap.

2. Connector analyzer J-24642 to 3-wire connector, Fig. 6-5.

3. Connect analyzer leads to battery, Fig. 6-5. Observe polarity.

4. Push analyzer button while cranking engine. If green light comes on, module and pickup coil are both good. The ignition coil is probably malfunctioning and should be checked with an ohmmeter as follows:

a. Remove cap and coil assembly by removing wiring harness connector and battery lead and turning four cap to housing latches.

b. Connect ohmmeter with one lead to the "BAT" terminal and the second lead to the "TACH" terminal as shown in position 1 of Fig. 6-6.

c. Reading should be zero or nearly zero. If not, replace coil.

d. Connect ohmmeter with one lead to the "TACH" terminal and the second lead to the coil secondary output terminal as shown in position 2 of Fig. 6-6. Use middle or high scale.

e. Reading should not be infinite. If reading is infinite, replace coil.

5. If red light comes on in step 3, either the module or the pickup coil is malfunctioning. Lift distributor cap and connect green and white analyzer wire clips to module. (These analyzer leads provide an alternating current pulse, just as good pickup coil does.)

6. Push analyzer button. If green light now comes on, the pickup coil is malfunctioning. If red light still comes on, the module is malfunctioning.

7. Replace malfunctioning component and retest.

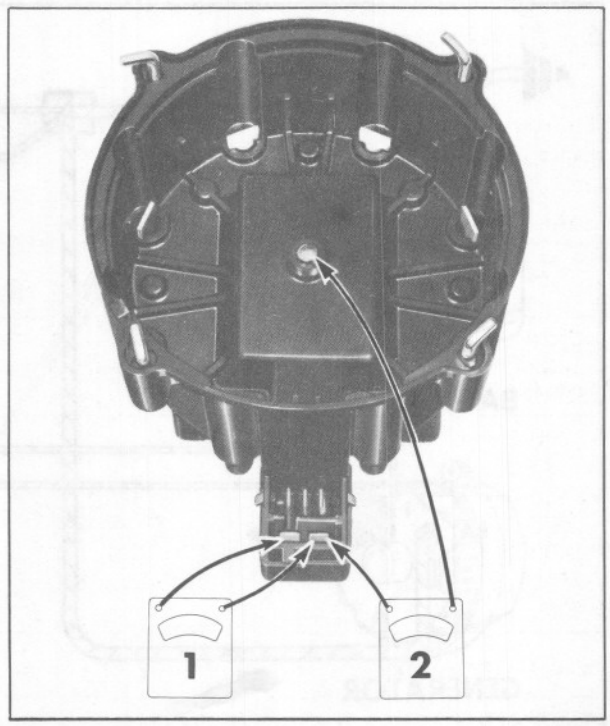


Fig. 6-6 Checking HEI Ignition Coil

THEORY OF OPERATION

GENERATOR (EXCEPT HEAVY DUTY)

1975 Cadillacs may be equipped with either of two generators. Standard equipment is a 63 ampere model which provides for normal electrical needs. Cars equipped with the Trailer Towing package (option YM7) use an 80 ampere model to satisfy the additional electrical loads of trailer towing operation. The 80 ampere generator is also available separately (option K97) for other uses where extra generator capacity is desired and is standard on the Limousine and Commercial Chassis (Series 6DF and 6ZZ).

All generators feature a solid state regulator that is mounted inside the generator slip ring end frame. All regulator components are enclosed into a solid mold, and this unit along with the brush holder assembly is attached to the slip ring end frame. The regulator voltage setting never needs adjusting, and no provision for adjustment is provided.

The generator rotor bearings contain a supply of lubricant sufficiently adequate to eliminate the need for periodic lubrication. Two brushes carry current through the two slip rings to the field coil mounted on the rotor, and under normal conditions will provide long periods of attention-free service.

The stator windings are assembled on the inside of a laminated core that forms part of the generator frame. A rectifier bridge connected to the stator windings contains six diodes, and electrically changes the stator a.c. voltages to a d.c. voltage which appears at the generator output terminal. Generator field current is supplied through a diode trio which also is connected to the stator windings. A capacitor, or condenser, mounted in the end frame protects the rectifier bridge and diode trio from high voltages, and suppresses radio noise.

No periodic adjustments or maintenance of any kind are required on the entire generator assembly.

A wiring circuit diagram is illustrated in Fig. 6-7. The basic operating principles are explained as follows.

When the switch is closed, current from the battery flows through the indicator lamp to the generator No. 1 terminal, through resistor R1, diode D1, and the base-emitter of transistor TR1 to ground, and then back to the battery. This turns on transistor TR1, and current flows through the generator field coil and TR1 back to the battery. The indicator lamp then turns on. Resistor R5 carries some of the indicator lamp current.

With the generator operating, a.c. voltages are

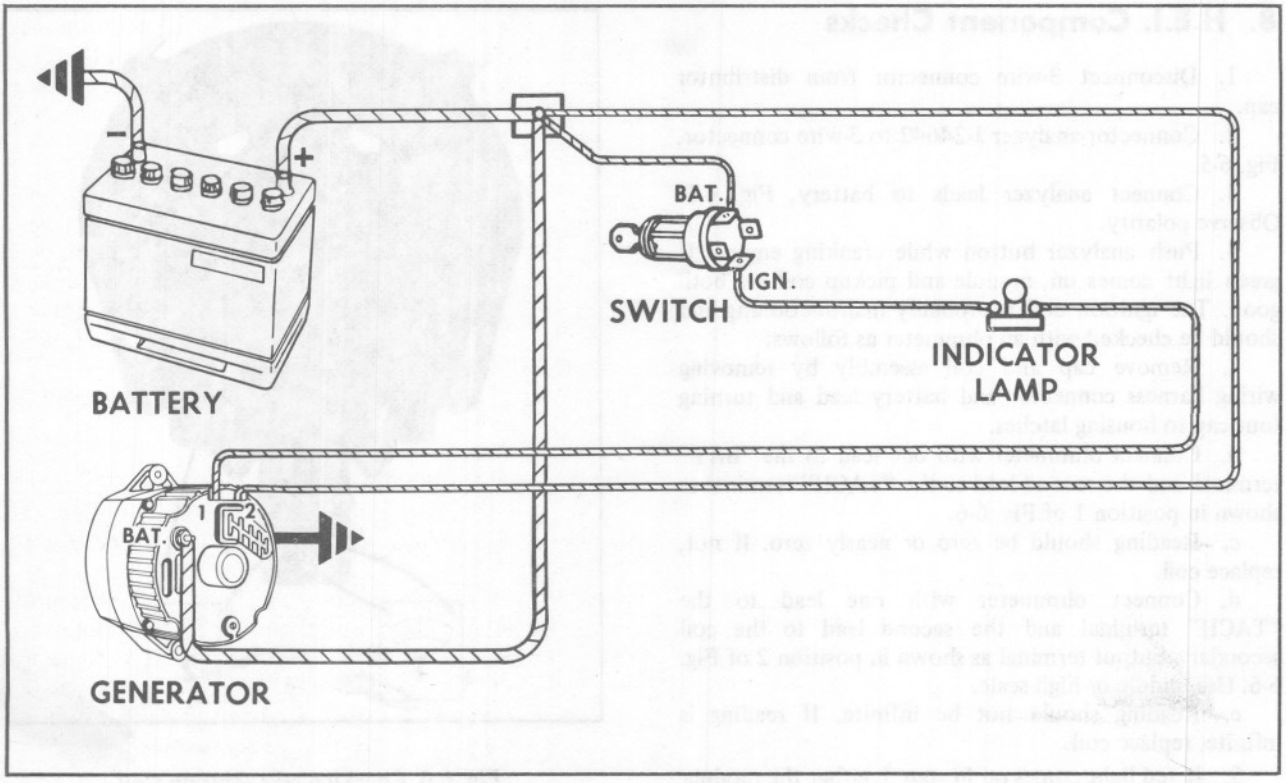


Fig. 6-7 Basic Charging Circuit

generated in the stator windings, and the stator supplies d.c. field current through the diode trio, the field, TR1, and then through the grounded diodes in the rectifier bridge back to the stator. Also, the six diodes in the rectifier bridge change the stator a.c. voltages to a d.c. voltage which appears between ground and the generator "BAT" terminal. As generator speed increases, current is provided for charging the battery and operating electrical accessories. Also, with the generator operating the same voltage appears at the "BAT" and No. 1 terminals, and the indicator lamp goes out to indicate the generator is producing voltage.

The No. 2 terminal on the generator is always connected to the battery but the discharge current is limited to a negligible value by the high resistances of R2 and R3. As the generator speed and voltage increase, the voltage between R2 and R3 increases to the point where zener diode D2 conducts. Transistor TR2 then turns on and TR1 turns off. With TR1 off, the field current and system voltage decrease, and D2 then blocks current flow, causing TR1 to turn back on. The field current and system voltage increase, and this cycle then repeats many times per second to limit the generator voltage to a preset value.

Capacitor C1 smooths out the voltage across R3, resistor R4 prevents excessive current through TR1 at high temperatures, and diode D3 prevents high-induced-voltages in the field windings when TR1 turns off. Resistor R2 is a thermistor which causes the regulated voltage to vary with temperature, thus providing the optimum voltage for charging the battery.

DIAGNOSIS CHARGING SYSTEM

9. Analyzing Charging System Troubles

Close adherence to the following procedures in the order presented will lead to the location and correction of integral charging system defects in the shortest possible time. Only a portion of these procedures need be performed. It will seldom be necessary to perform all the procedures in order to locate the trouble.

A basic wiring diagram showing lead connections is shown in Fig. 6-8. To avoid damage to the electrical equipment, always observe the following precautions:

- Do not polarize the generator.
- Do not short across or ground any of the terminals in the charging circuit except as specifically instructed in this manual.
- NEVER operate the generator with the output terminal oper-circuited.
- Make sure the generator and battery have the same ground polarity.

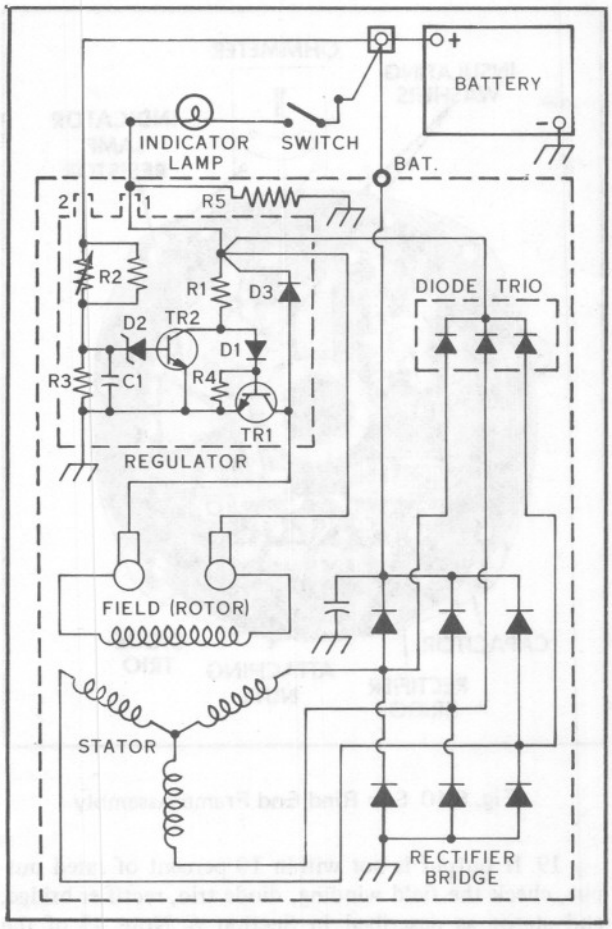


Fig. 6-8 Charging Circuit Wiring

• When connecting a charger or a booster battery to the vehicle, connect negative to negative and positive to positive.

Trouble in the charging system will show up as one or more of the following conditions:

A. Faulty indicator lamp operation.

B. An undercharged battery as evidenced by slow cranking and low specific gravity readings.

C. An overcharged battery as evidenced by excessive water usage.

a. Faulty Indicator Lamp Operation

Check the indicator lamp for normal operation as follows:

Switch	Lamp	Engine
OFF	OFF	STOPPED
ON	ON	STOPPED
ON	OFF	RUNNING

If the indicator lamp operates normally, proceed to "Undercharged battery" or "Overcharged battery" section. Otherwise, proceed to either one of the following three abnormal conditions.

1. Switch Off, Lamp On—In this case, disconnect the two leads from the generator No. 1 and No. 2 terminals. If the lamp stays on, there is a short between these two leads. If the lamp goes out, replace the rectifier bridge as described in Note 11. This condition will cause an undercharged battery.

2. Switch On, Engine Stopped, Lamp Off—This condition can be caused by a blown (5 AMP) "Gage" fuse, a burned out light bulb, malfunctioning socket or an open in one of the following wires, (12 Pink) wire between the ignition switch and the gage fuse; the (18 pink) wire between the fuse and the light bulb or the (16 brn.) wire between the bulb and the bulk head connector.

If no malfunction has been found, proceed to "undercharged battery".)

3. Switch On, Engine Running, Lamp On—This condition is most likely caused by a broken fan belt. Check to make sure the No. 1 and No. 2 leads at the generator are correctly installed.

If the above conditions are OK, the problem is inside the generator. Disassemble and test the following components as described in Section 6, Note 49 of the 1974 Shop Manual and Note 12 of this supplement; rectifier bridge stator, field winding and diode trio. If no malfunction is found replace the regulator.

b. Undercharged Battery

The condition, as evidenced by slow cranking and low specific gravity readings, can be caused by one or more of the following conditions even though the indicator lamp may be operating normally.

1. Insure that the undercharged condition has not been caused by accessories having been left on for extended periods.
2. Check the drive belt for proper tension.
3. If a battery malfunction is suspected, refer to battery diagnosis in Section 6, Notes 11 through 14 of the 1974 Shop Manual.
4. Inspect the wiring. Check all connections for tightness and cleanliness, including the slip connectors at the generator and firewall, and the battery cables and terminals and starter solenoid.
5. With all wiring harness leads connected, connect a voltmeter from:
   a. generator "BAT" terminal to ground.
   b. generator No. 1 terminal to ground.
   c. generator No. 2 terminal to ground.

A zero reading indicates an open between voltmeter connection and battery. Some voltage should be indicated.

6. If previous Steps 1 through 5 check satisfactorily, check generator as follows:
7. Disconnect positive battery cable.
8. Install knife blade switch between battery positive terminal and battery cable.

(NOTE: Two battery terminal adapters are required to perform this operation on the side terminal battery. These adapters are available from several equipment manufacturers and their instructions for use should be followed.)

9. Connect VAT-20 as follows:

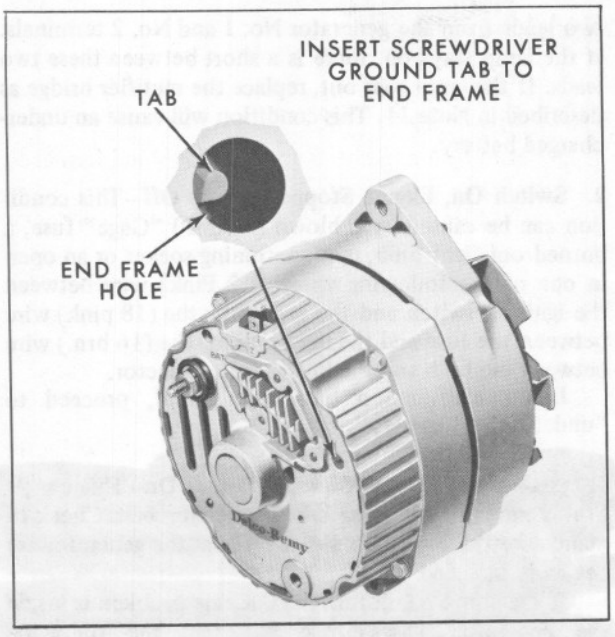


Fig. 6-9 Grounding Generator Field Winding

a. Set ground polarity switch to "negative" position.

b. Set load control to "direct" position.

c. Connect "BAT" lead of ammeter to knife blade switch terminal stud and connect "REG" lead to positive battery cable on the knife blade switch.

d. Connect ammeter "GRD" terminal to negative battery terminal.

10. Disconnect the feed wire from the heater or A/C blower motor.

11. Close knife blade switch and start engine.

12. Turn off all accessories and close car doors.

13. Open knife blade switch and raise engine speed to approximately 2000 RPM.

14. Adjust load control for highest ammeter reading. Voltage should not be allowed to rise above 16 volts.

15. If ampere output is within 10 percent of rated output as stamped on generator frame, generator is not malfunctioning; recheck Steps 1 through 5.

16. If ampere output is <u>not</u> within 10 percent of rated output, ground the field winding by inserting a screwdriver into the test hole, Fig. 6-9.

CAUTION: Tab is within 3/4 inch of casting surface. Do not force screwdriver deeper than one inch into end frame.

17. Operate engine at approximately 2000 RPM and adjust load control as required to obtain maximum current output.

18. If output is within 10 percent of rated output, replace regulator as described in Note 11.

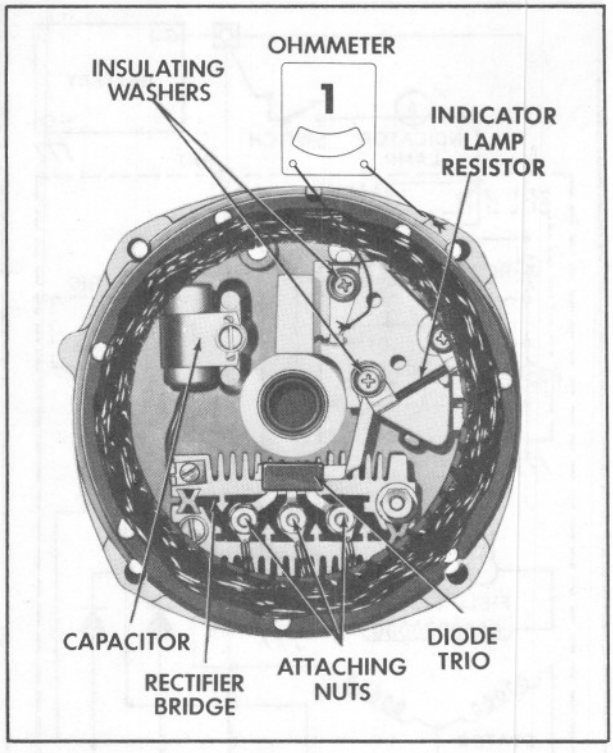


Fig. 6-10 Slip Rind End Frame Assembly

19. If output is not within 10 percent of rated output, check the field winding, diode trio, rectifier bridge, and stator as described in Section 6, Note 49 of the 1974 Shop Manual and Note 12 of this supplement.

20. Turn off engine and remove equipment from vehicle.

c. Overcharged Battery

If battery checks good, but an obvious overcharge condition exists as evidenced by excessive battery water usage (more than one ounce per cell per month), proceed as follows:

1. Separate end frames as described in Note 11a.

Check Field winding for shorts. If shorted (0 reading) replace rotor and regulator.

2. Connect ohmmeter using lowest range scale from brush lead clip to end frame as shown in Step 1, Fig. 6-10, then reverse lead connections.

3. If both readings are zero, either the brush lead clip is grounded or regulator is malfunctioning.

4. A grounded brush lead clip can result from omission of insulating washer, Fig. 6-13, omission of insulating sleeve over screw, or damaged insulating sleeve. Remove screw to inspect sleeve. If satisfactory, replace regulator as described in Note 11.

SERVICE INFORMATION

10. Generator Removal and Installation (Except H.D. Generator) (Fig. 6-11)

a. Removal

1. Raise hood and disconnect negative battery cable.
2. Remove protective cap from generator battery terminal and remove wire from terminal.
3. Disconnect double connector from top of generator.
4. Remove screw from generator adjusting link.
5. Remove screw from rear of generator and retain shims for installation.
6. Loosen generator pivot bolt and remove generator drive belt.
7. Loosen A.I.R. pump pivot bolt behind pulley using a "starter wrench" (if so equipped).
8. Loosen two screws securing front bracket to engine.
9. Generator, spacer and lower through bolt may now be removed by twisting generator towards fender for bolt clearance.

b. Installation

1. Install lower through bolt and spacer on generator and swivel assembly into position. Start bolt threads into rear bracket.
2. Tighten two screws securing front bracket to engine, and one A.I.R. pump pivot bolt.
3. Loosely install adjustment link screw, install belt and tension generator belt as described in Note 2. Tighten generator pivot bolt.
4. Install enough shims at rear of generator to completely fill space between bracket and generator. Install screw and tighten to 20 foot-pounds.
5. Connect double connector at top of generator.
6. Connect wire to generator battery terminal and install protective cap.
7. Connect battery cable.

11. Generator Disassembly and Assembly (Except H.D. Generator) (Fig. 6-12)

1975 generators may be equipped with either of two designs of rotor shafts. The early design rotor has a smaller diameter shaft then the later design. When servicing these generators the following should be noted.

a. The large diameter rotor shaft may be installed in a "small rotor" generator if the "collar", Fig. 6-12 is omitted during assembly.

b. A small diameter rotor shaft may be installed in a "large rotor" generator if a "collar", Fig. 6-12 is obtained and installed during assembly.

a. Disassembly

1. Scribe an alignment mark on both end frames to locate parts during assembly.
2. Remove four through bolts securing drive end frame to slip ring end frame.
3. Separate drive end frame and rotor from slip ring end frame and stator.

CAUTION: Brushes should be cleaned as soon as possible to prevent grease from soaking into brushes.

4. Remove brush springs which will now be loose.
5. Place a piece of tape (pressure sensitive tape, not friction tape) over the slip ring end bearing and the bearing shaft on the rotor.
6. Remove three nuts holding stator leads to rectifier bridge and remove stator.
7. Remove one screw with plastic insulator holding diode trio to brush holder and remove diode trio.
8. Remove screws securing regulator and brush holder. Remove indicator lamp resistor, brush holder and regulator.
9. Remove rectifier bridge by removing the following fasteners: one screw with washer; one screw at capacitor lead; one nut and washer from "BAT" terminal stud.
10. Remove insulator and "BAT" terminal stud.
11. Remove one screw securing capacitor to end frame and remove capacitor.
12. To remove rotor from drive end frame, install rotor in a vise and tighten only enough to permit removal of shaft nut.

CAUTION: Avoid excessive tightening as this may cause distortion of the rotor.

13. Remove shaft nut, washer, pulley, fan and collar. Separate end frame from rotor.

b. Assembly

1. Position "BAT" terminal stud in end frame with molded plastic insulator outside and fiber insulator inside.
2. Position rectifier bridge to end frame and secure with nut and washer at one end and screw with washer at opposite end.
3. Install capacitor and secure to end frame and heat sink with screws, Fig. 6-13.
4. Position regulator in slip ring end frame. Position indicator lamp resistor and brush holder over regulator. Install two regulator mounting screws shown in Fig. 6-13.
5. Position diode trio on rectifier bridge and secure to regulator with insulated screw.
6. Position stator to end frame with leads over rectifier bridge studs and secure with three nuts.
7. Install brush springs and brushes in brush holder and insert a straight wire or pin through hole in end frame and holes in bottom of brush holder. This will hold brushes until rotor is assembled into frame.

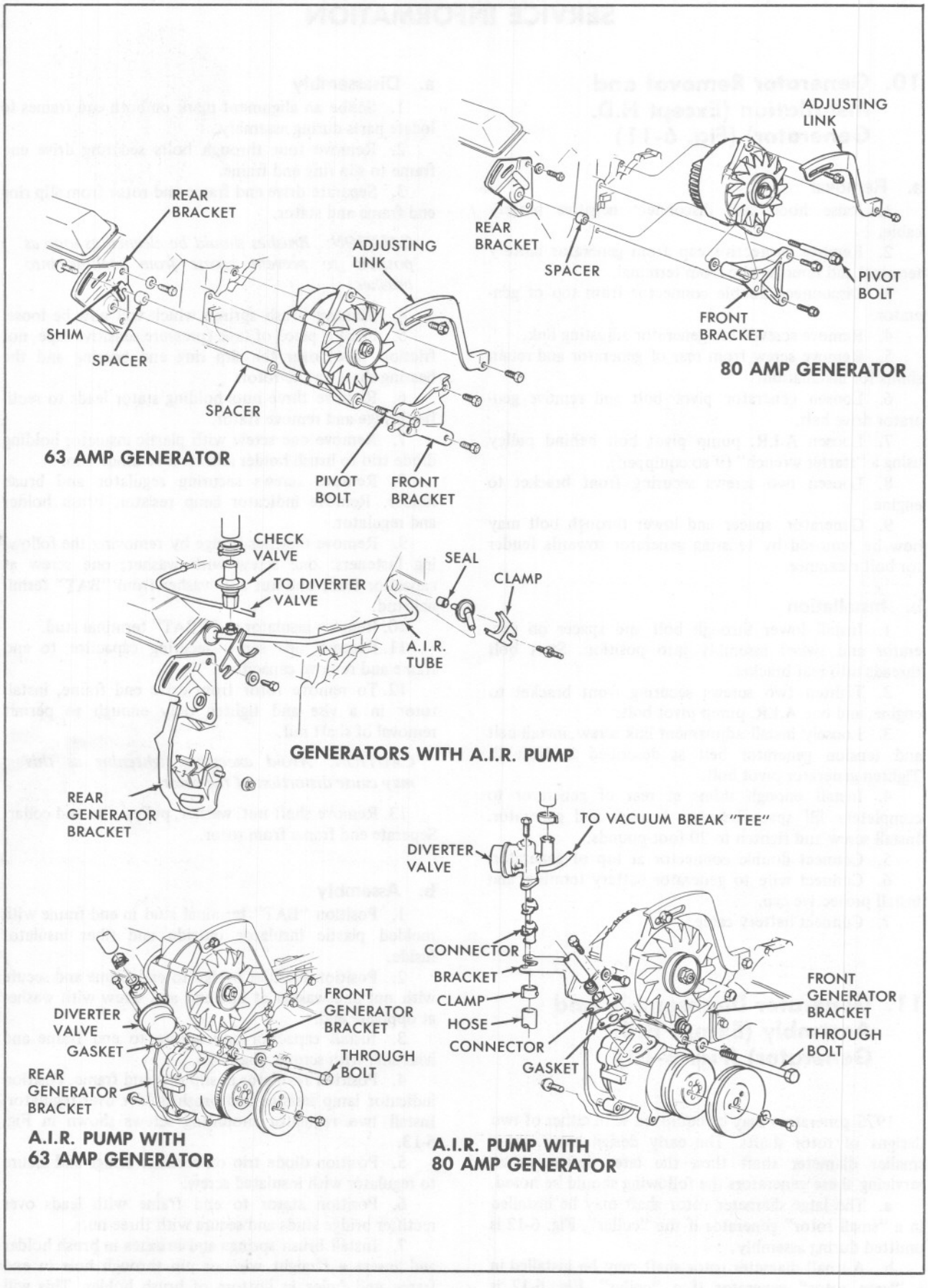


Fig. 6-11 Generator Attaching Parts

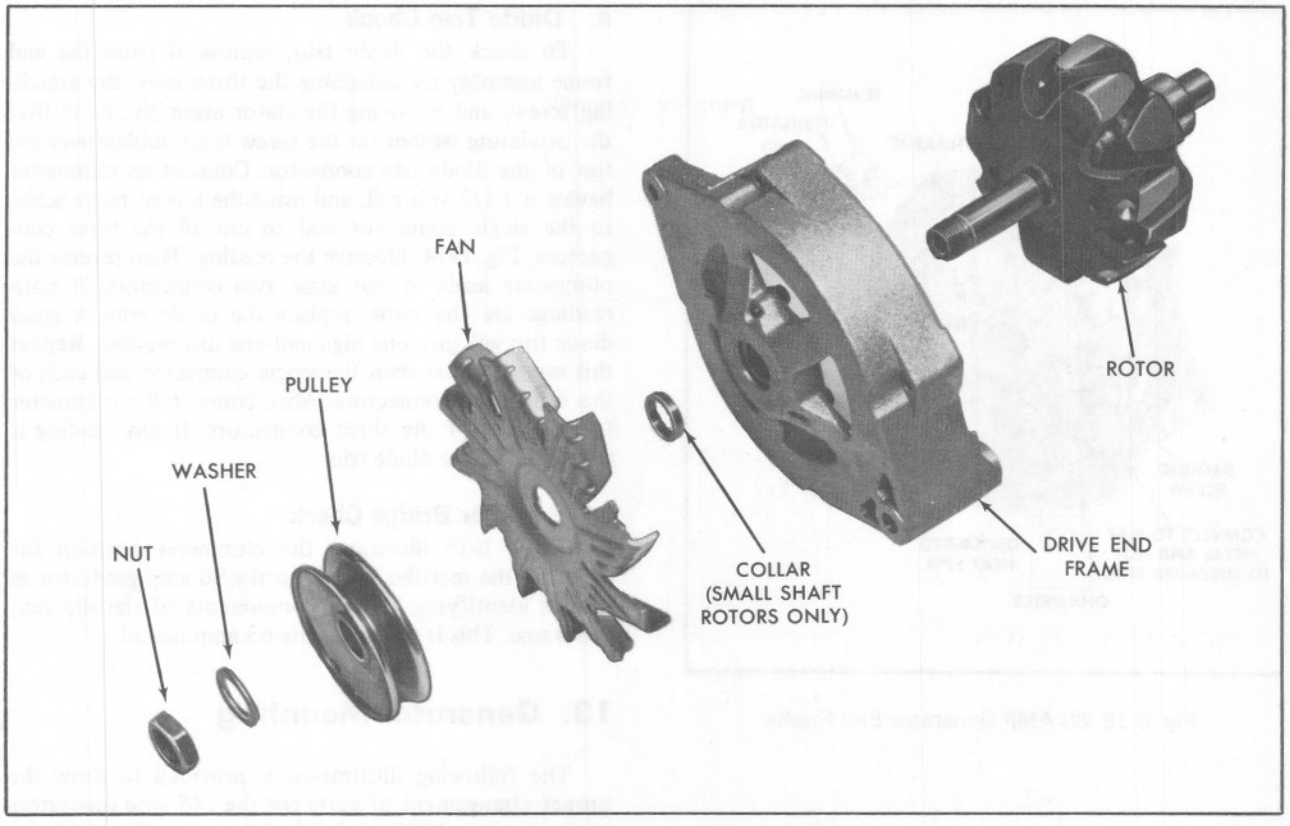


Fig. 6-12 Rotor and Drive End Frame

8. Install rotor in vise with drive end up. Tighten vise firm but not tight.

CAUTION: Avoid excessive tightening as this may cause distortion of the rotor.

9. Position end frame, collar (if used), fan, pulley and washer over rotor shaft, Fig. 6-12, secure with nut.

10. Install rotor to slip ring end frame aligning scribe marks when installing. Remove brush holding wire.

11. Secure drive end frame to slip ring end frame with four through bolts.

12. Generator Inspection and Test (Except H.D. Generator)

(NOTE: Tests not listed in this note are the same as those described in Section 6, Note 49 of the 1974 Shop Manual.)

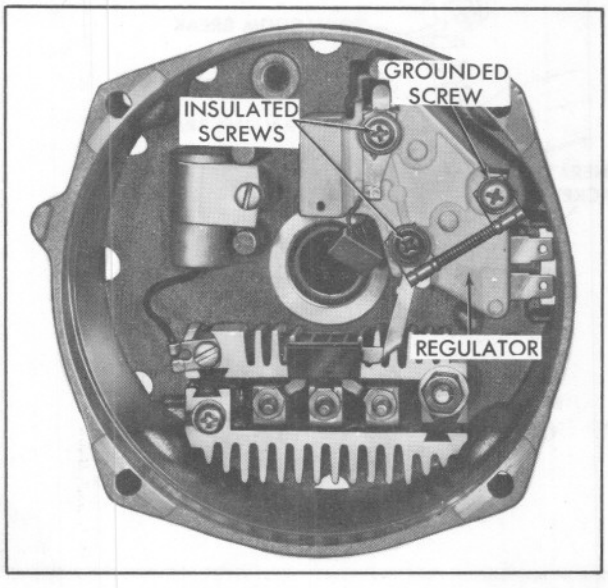


Fig. 6-13 Regulator Attaching Screw Location

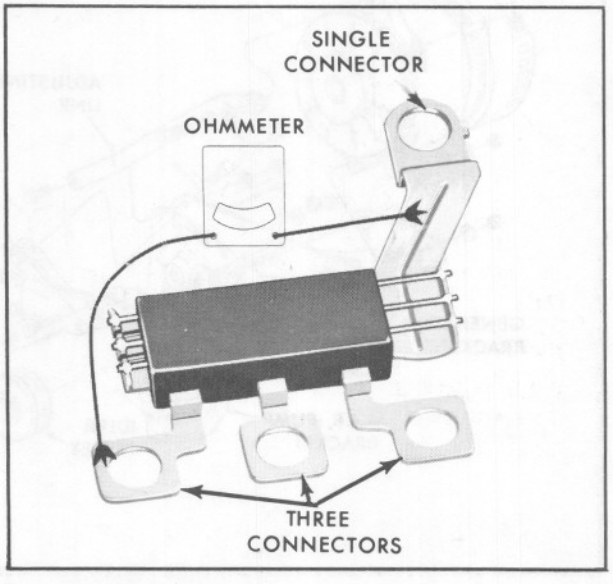


Fig. 6-14 Diode Trio Check

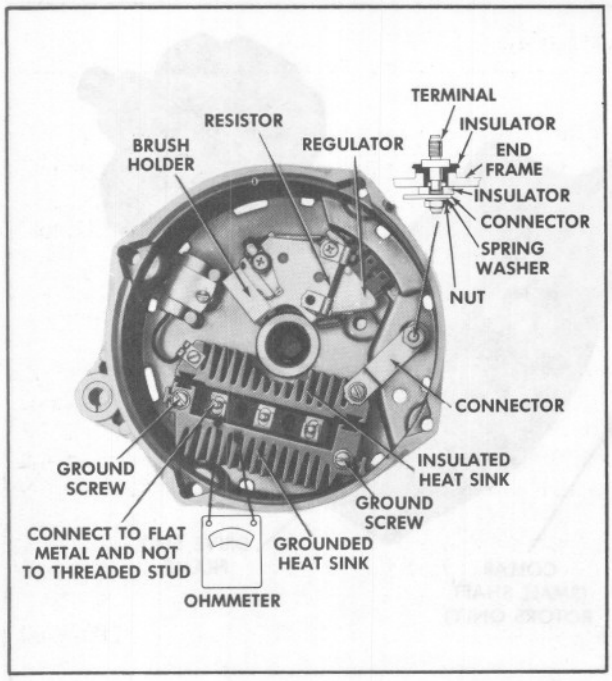


Fig. 6-15 80 AMP Generator End Frame

a. Diode Trio Check

To check the diode trio, remove it from the end frame assembly by detaching the three nuts, the attaching screw, and removing the stator assembly. Note that the insulating washer on the screw is assembled over the top of the diode trio connector. Connect an ohmmeter having a 1-1/2 volt cell, and using the lowest range scale, to the single connector and to one of the three connectors, Fig. 6-14. Observe the reading. Then reverse the ohmmeter leads to the same two connectors. If both readings are the same, replace the diode trio. A good diode trio will give one high and one low reading. Repeat this same test between the single connector and each of the other two connectors. Also, connect the ohmmeter to each pair of the three connectors. If any reading is zero, replace the diode trio.

b. Rectifier Bridge Check

Figure 6-15 illustrates the ohmmeter position for checking the rectifier bridge on the 80 amp generator as well as identifying various components of the slip ring end frame. This is similar to the 63 amp model.

13. Generator Mounting

The following illustration is provided to show the proper arrangement of parts for the 145 amp generators used on some 1975 model Cadillacs. See Fig. 6-11 for parts arragement for other generators.

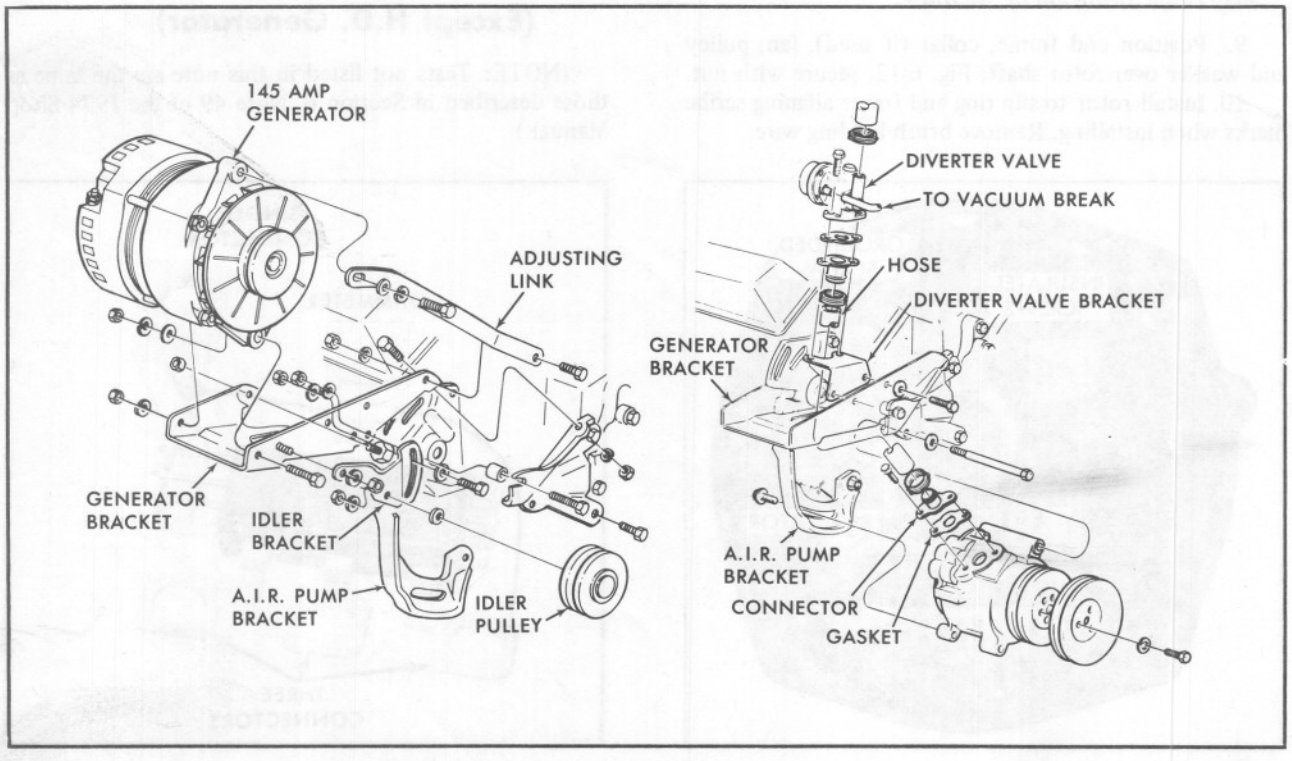


Fig. 6-16 Generator Mounting – H.D. Generator

SPECIFICATIONS

BATTERY	
Replace with Except Eldorado	R89W
Eldorado	R89S
Capacity	74 AMP Hours
Full Charge Specific Gravity @ 80°F.	1.250 to 1.280
Voltage	12 Volts
Cables	1/0 Gage
Terminal Grounded	Negative
Cranking Power at 0°F.	3600 Watts
STARTER MOTOR	
Brush Springs Tension	35 OZ
No Load Specifications	
Voltage	9 Volts
Amperage	65-95 AMPS
Speed	7,000-10,500 RPM
SOLENOID	
Amperage Draw at 10 Volts	
Hold-In Winding	14.5-16.5 AMPS
Both Windings	41-47 AMPS
GENERATOR	
Rated Output (At 14 Volts):	
All Except Limousine and Commercial Chassis	63 AMPS
Limousine and Commercial Chassis*	80 AMPS
Commercial Chassis with H.D. Generator	145 AMPS
Field Current Draw (At 12 Volts and 80°F)	4.0 to 4.5 AMPS
GENERATOR PULLEY RATIO:	
63 AMP Without A.I.R.	3.09 to 1
63 AMP With A.I.R.	3.36 to 1
80 AMP Without A.I.R.	2.86 to 1
80 AMP With A.I.R.	3.12 to 1
145 AMP	2.28 to 1
DISTRIBUTOR	
Initial Timing	6° BTDC
Rotation	Clockwise
Firing Order	1,5,6,3,4,2,7,8
Centrifugal Advance	See Page 6-8
Vacuum Advance	See Page 6-8
IGNITION COIL	
Primary Resistance	.4 to .5 OHMS
Secondary Resistance	8000-9500
SPARK PLUGS	
Type (AC Number)	R-45NSX
Gap	.060 In.
Thread Diameter	14 MM
Torque	25 Foot-Pounds

*Also included with Trailer Towing Package.

SPECIAL TOOLS

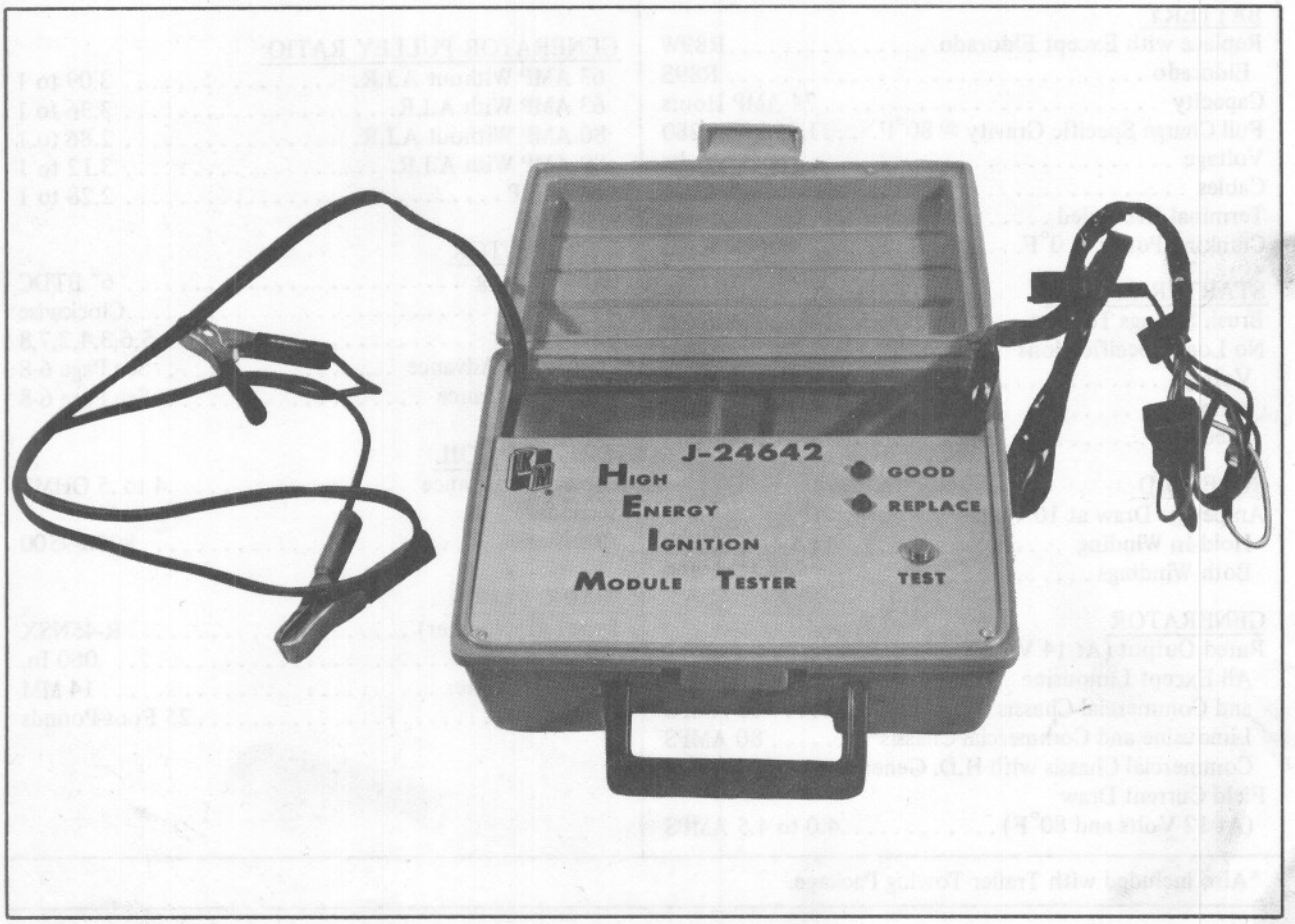


Fig. 6-17 Special Tools

GENERAL DESCRIPTION
FUEL SYSTEM

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

14. Fuel Pump - Fuel Filter

The 1975 fuel pump is identical to previous designs except that fuel filter formerly located inside the pump is moved to a position behind the carburetor inlet nut, Fig. 6-18.

The filter should be replaced each 15,000 miles as described in Note 18e.

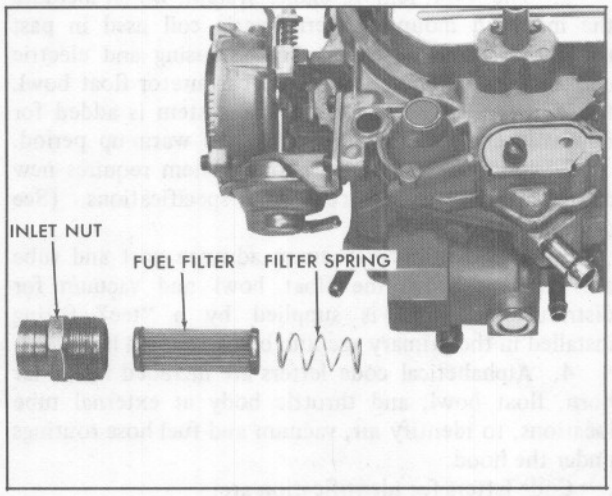


Fig. 6-18 Fuel Filter

15. Fuel Requirements

1975 Cadillac engines are designed to operate on UNLEADED fuel only. A restricted fuel tank filler neck is used to deter addition of leaded fuels as described in Section 8, Note 1. Unleaded fuel will minimize spark plug fouling as well as prevent contamination of the catalytic converter. A complete description of the exhaust system including the catalytic converter is presented in Section 8.

(NOTE: 1975 Cadillacs built for operation in foreign countries where unleaded fuel may not be available, can be equipped with option K-75 which deletes the restricted gas tank filler neck and the catalytic converter.)

16. Intake Manifold

The 1975 intake manifold differs from the 1974 version only due to the elimination of the stainless steel choke pocket. The choke pocket is not required with the new electric choke.

GENERAL DESCRIPTION
M4MEA QUADRAJET CARBURETOR

The Rochester model M4MEA Quadrajet carburetor (Fig. 6-19) for 1975 Cadillacs is similar in operation to the 1974 4MV Quadrajet model except for the following:

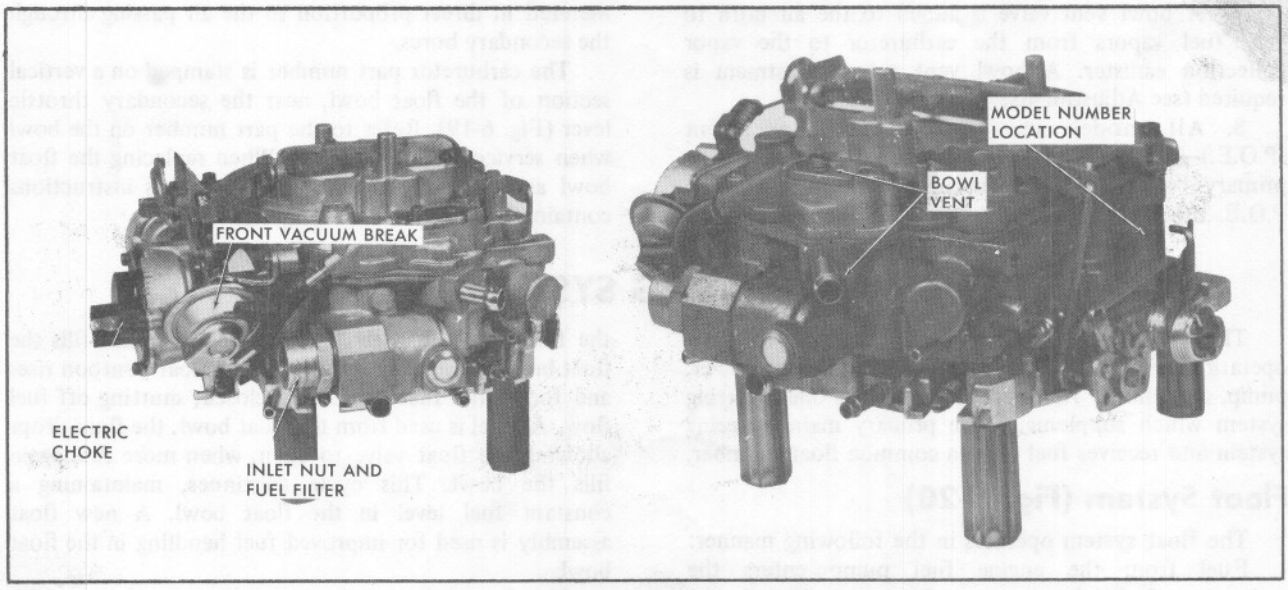


Fig. 6-19 Quadrajet M4 MEA Carburetor

1. All models have been recalibrated to meet performance and emission requirements for the 1975 engines.

2. The 4MV remote choke system, which includes the manifold mounted thermostatic coil used in past models, is replaced by a choke housing and electric choke assembly mounted on the carburetor float bowl. In addition, a dual vacuum break system is added for improved choke operation during the warm-up period.

The integral carburetor choke system requires new adjustment procedures and specifications. (See adjustments, page 6-37).

3. The distributor vacuum advance port and tube are removed from the float bowl and vacuum for distributor advance is supplied by a "tee" fitting installed in the primary vacuum break vacuum hose.

4. Alphabetical code letters are included in the air horn, float bowl, and throttle body at external tube locations, to identify air, vacuum and fuel hose routings under the hood.

Code letters for identification are:

CODE	FUNCTION
A	Vacuum Break Assembly and Distributor Vacuum Advance
T	Bowl Vent to ECS Canister
D	Transmission Vacuum Modulator
L	PCV Hose
J	EGR Hose
K	Purge Hose From ECS Canister
V	Power Brake (1/4 Pipe Tap)
N	Rear Vacuum Break

5. A 2" pleated paper fuel inlet filter, with longer fuel inlet nut, is added to the carburetor float bowl on all models, Fig. 6-18.

6. The float assembly is re-designed and is used with a windowless type needle seat for better fuel handling in the float bowl. Also, a new plastic filler block is used above the float chamber to reduce fuel slosh.

7. A bowl vent valve is added to the air horn to vent fuel vapors from the carburetor to the vapor collection canister. A bowl vent valve adjustment is required (see Adjustments, Page 6-37).

8. All models use the Pull-Over Enrichment (P.O.E.) feature to provide added fuel delivery in the primary bores during higher carburetor air flows. The P.O.E. tubes are restricted in size at the upper end (air horn bore) to reduce fuel delivery during part throttle and wide-open engine operation.

9. The Adjustable Part Throttle (A.P.T.) feature is changed in that an adjustable metering rod assembly, operating in a fixed jet, has been added to the float bowl on the choke housing side of all models. The threaded metering rod assembly is adjusted at time of manufacture to provide close tolerance control of fuel flow to the main metering system, thereby better controlling air/fuel ratios during the part throttle range. A barometric pressure-sensitive aneroid (sometimes called a "bellows") is included as an integral part of the threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure change (such as altitude), responds to a change in air pressure to maintain control of part throttle air/fuel ratios.

10. A multiple stage power enrichment, consisting of two power pistons, is used on all except California cars (see description on page 6-23 and definition of California cars on Page 6-47), for more sensitive control of air/fuel ratios during light duty engine power requirements while providing richer mixtures during moderate to heavy engine loads. The system consists of an auxiliary power piston with single metering rod operating in a fixed jet, and a conventional main (primary) power piston with two metering rods operating in replaceable main metering jets.

11. An expander (garter) spring has been added beneath the plunger cup on the accelerator pump assembly for improved fuel delivery.

The M4MEA model Quadrajet carburetors are two stage carburetors of downdraft design. The revised carburetors include the proven design features of previous models. The triple venturi system (with 1-7/32" venturi) is used on the primary side of the Quadrajet carburetor, with small 1-3/8" throttle valve bores. The triple venturi stack-up, plus small primary throttle valve bores, results in good fuel control during part throttle operation.

The secondary side has two large bores (2-1/4"). Using the air valve principle in the secondary side, fuel is metered in direct proportion to the air passing through the secondary bores.

The carburetor part number is stamped on a vertical section of the float bowl, near the secondary throttle lever (Fig. 6-19). Refer to the part number on the bowl when servicing the carburetor. When replacing the float bowl assembly, follow the manufacturer's instructions contained in the service package.

OPERATING SYSTEMS

The primary side of the carburetor has six systems of operation. They are float, idle, main metering, power, pump, and choke. The secondary side has one metering system which supplements the primary main metering system and receives fuel from a common float chamber.

Float System (Fig. 6-20)

The float system operates in the following manner:

Fuel from the engine fuel pump enters the carburetor fuel inlet passage. It passes through the pleated paper filter element, fuel inlet valve, and on into the float bowl chamber. As the incoming fuel fills the float bowl to the prescribed level, the float pontoon rises and forces the fuel inlet valve closed, shutting off fuel flow. As fuel is used from the float bowl, the float drops allowing the float valve to open, when more fuel again fills the bowl. This cycle continues, maintaining a constant fuel level in the float bowl. A new float assembly is used for improved fuel handling in the float bowl.

The float pontoon is solid and is made of a light weight closed cell plastic material. This feature gives

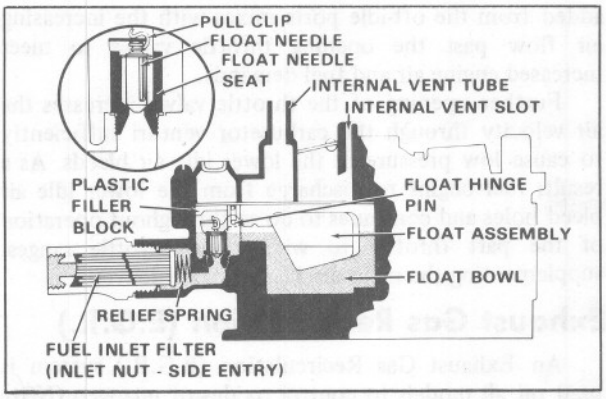


Fig. 6-20 Float System

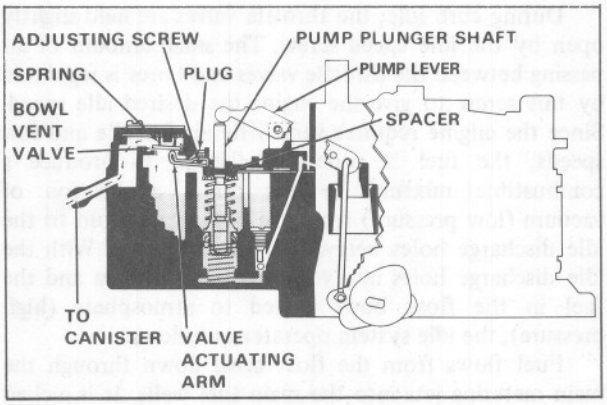


Fig. 6-21 Bowl Vent

added buoyancy to allow the use of a single float to maintain constant fuel levels. A float pull clip, fastened to the float valve, hooks over the edge of the float arm at the center as shown in Fig. 6-20. Its purpose is to assist in lifting the float valve off its seat whenever fuel level in the float bowl is low.

CAUTION: *Do not place pull clip through small holes in top of float arm. Severe flooding will result.*

No side windows are used in the float valve seat so that all fuel will be discharged over the top of the float valve seat. This provides a smoother flow of fuel through the float valve seat to control fuel turbulence in the float bowl.

The carburetor float chamber is internally vented by a vertical slot, cast in the air horn, located at the rear of the primary venturis, and by a pressed-in vent tube located at the front of the air horn. The purpose of the vertical vent slot and vent tube is to balance air pressure acting on the fuel in the float bowl with air flow through the carburetor bores. In this way, balanced air/fuel ratios are maintained throughout all ranges of carburetor operation. Also, during periods of hot engine operation, the vents are used to relieve vapor pressure that builds up in the float bowl, thereby preventing the pushing of raw fuel through the discharge nozzles into the engine to cause hard hot restarts.

The float bowl casting is revised to accommodate the addition of the auxiliary power piston and metering rod assembly and A.P.T. metering rod/aneroid assembly. As a result, a new air horn gasket and new plastic filler block are used. The new plastic filler block, located in the top of the float chamber over the float valve, is used to prevent fuel slosh in the float bowl.

New float bowl disassembly and assembly procedures are required with the addition of the auxiliary power piston and metering rod assembly, and new plastic filler block. (See Notes 18 and 19)

Float System — Bowl Vent Valve To Canister (Fig. 6-21)

The carburetor float chamber is externally vented, through a connecting hose to the vapor collection canister, by a bowl vent valve located in the air horn. The spring loaded valve is used to improve hot engine restarts.

The bowl vent valve operates as follows:

During periods of engine idle, deceleration and shutdown, a spacer on the pump plunger shaft in the full up position contacts the bowl vent valve actuating arm to open the valve against spring tension to vent fuel vapors that may form in the float bowl, when the engine is hot, to the vapor collection canister. The hot fuel vapors by-pass the open vent valve where, through a tube in the air horn and connecting hose, they are stored in the vapor collection canister until the canister is purged during normal engine operation.

As the throttle is opened beyond the idle position, the accelerator pump actuating arm moves downward and the spring closes the valve restoring the carburetor float chamber to normal internal venting.

The bowl vent valve should be checked to specifications and, if necessary, adjusted. (See Note 25)

Idle System (Fig. 6-22)

Each primary bore of the Quadrajet carburetor has a separate and independent idle system to supply the correct air/fuel mixture ratios during idle and off-idle operation. The idle system is used during this period because air flow through the carburetor venturi is not great enough to obtain efficient metering from the main discharge nozzles.

The idle system operates as follows:

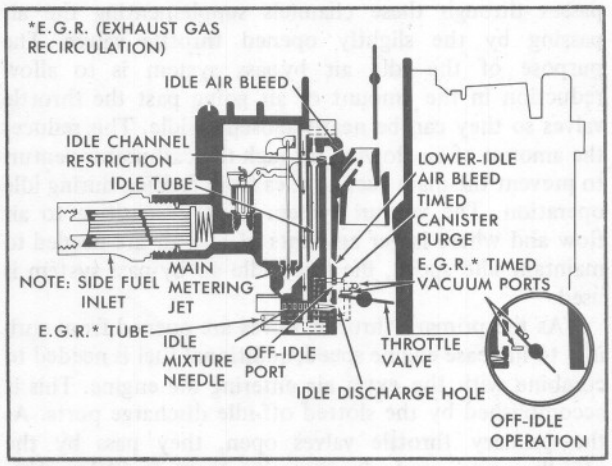


Fig. 6-22 Idle System

During curb idle, the throttle valves are held slightly open by the idle speed screw. The small amount of air passing between the throttle valves and bores is regulated by this screw to give the engine the desired idle speed. Since the engine requires very little air for idle and low speeds, the fuel is added to the air to produce a combustible mixture by the direct application of vacuum (low pressure) from the engine manifold to the idle discharge holes below the throttle valves. With the idle discharge holes in a very low pressure area and the fuel in the float bowl vented to atmosphere (high pressure), the idle system operates as follows:

Fuel flows from the float bowl down through the main metering jets into the main fuel wells. It is picked up in the main wells by the two idle tubes (one for each bore) which extend into the wells. The fuel is metered at the lower tip of each idle tube and passes up through the tube. The fuel is mixed with air at the top of each idle tube through an idle air bleed.

Then the fuel mixture crosses over to the idle down channels where it is mixed with air at the side idle bleed located just above the idle channel restriction. The mixture continues down through the calibrated idle channel restrictions past the lower idle air bleeds and off-idle discharge ports where it is further mixed with air. The air/fuel mixture moves down to the idle mixture needle discharge holes where it enters the carburetor bores and blends with the air passing the slightly open throttle valves. The combustible air/fuel mixture then passes through the intake manifold to the engine cylinders.

The idle mixture needles are adjusted at time of manufacture to blend the correct amount of fuel mixture from the idle system with the air entering the engine at idle. Turning the idle mixture needles inward (clockwise) decreases the idle fuel discharge and turning the mixture needles outward (counterclockwise) enriches the engine idle mixture. Idle mixture needles are adjusted at time of manufacture, and then limiter caps are installed to discourage idle mixture needle readjustment.

M4MEA carburetor models have a fixed idle air bypass system. This consists of air channels which lead from the top of each carburetor bore in the air horn to a point below each throttle valve. At normal idle, extra air passes through these channels supplementing the air passing by the slightly opened throttle valves. The purpose of the idle air bypass system is to allow reduction in the amount of air going past the throttle valves so they can be nearly closed at idle. This reduces the amount of air flowing through the carburetor venturi to prevent the main fuel nozzles from feeding during idle operation. The venturi system is very sensitive to air flow and where larger amounts of idle air are needed to maintain idle speed, the fixed idle air by-pass system is used.

As the primary throttle valves are opened from curb idle to increase engine speed, additional fuel is needed to combine with the extra air entering the engine. This is accomplished by the slotted off-idle discharge ports. As the primary throttle valves open, they pass by the off-idle ports, gradually exposing them to high engine vacuum below the throttle valves. The additional fuel added from the off-idle ports mixes with the increasing air flow past the opening throttle valves to meet increased engine air and fuel demands.

Further opening of the throttle valves increases the air velocity through the carburetor venturi sufficiently to cause low pressure at the lower idle air bleeds. As a result, fuel begins to discharge from the lower idle air bleed holes and continues to do so throughout operation of the part throttle to wide open throttle ranges, supplementing the main discharge nozzle delivery.

Exhaust Gas Recirculation (E.G.R.)

An Exhaust Gas Recirculation (E.G.R.) system is used on all models to control oxides of nitrogen (N0x) emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor. Two punched ports, one located just above the throttle valve and the other near the upper edge of the throttle body casting, provide a timed vacuum signal port for E.G.R. valve operation in the off-idle and part throttle ranges of the carburetor.

The purpose of the E.G.R. system is to supply a metered amount of exhaust gases to the combustion mixtures and lower combustion temperatures, thereby reducing oxides of nitrogen during these ranges of engine operation.

The port system operates as follows:

As the throttle valve is opened beyond the idle position the first vacuum port for the E.G.R. system is exposed to manifold vacuum to supply a vacuum signal to the E.G.R. Valve. To control the vacuum signal at the lower port, the upper port bleeds air into the vacuum channel and modulates the amount of vacuum signal supplied by the lower E.G.R. port. In this manner, the E.G.R. valve can be timed for precise metering of exhaust gases to the intake manifold, dependent upon location of the ports in the carburetor bore and degree of throttle valve opening.

As the throttle valves are opened further in the part throttle range, the upper port ceases to function as an air bleed and is gradually exposed to manifold vacuum to supplement the vacuum signal at the lower port and maintain correct E.G.R. valve position.

The upper and lower vacuum ports connect to a cavity in the throttle body which, in turn, through a passage, supply the vacuum signal to an E.G.R. tube pressed into the front corner of the throttle body casting (Code "J"). The tube in the throttle body is connected by a hose to the E.G.R. valve located on the intake manifold.

The E.G.R. valve remains closed during periods of engine idle and deceleration to prevent rough idle, which could be caused from excessive exhaust gas contamination in the idle air/fuel mixtures.

Canister Purge

Since the fuel tank is not vented to atmosphere and fuel vapors are collected in the vapor canister, purge ports are provided in the carburetor throttle body. The purge ports lead through passages to a common chamber in the throttle body to a purge tube (Code K) which connects by a hose to the vapor canister.

The purge ports consist of an orifice in each primary bore located above the throttle valve.

Timed Bleed Purge

A timed bleed purge is used to purge the vapor canister. The timed bleed purge port is located in each bore next to the off-idle discharge port. The timed purge operates during off-idle, part throttle, and wide-open throttle operation. This provides a large purge capacity for the vapor canister and prevents over-rich mixtures from being added to the carburetor metering at any time.

Main Metering System (Fig. 6-23 and 6-24)

The main metering system supplies fuel to the engine from off-idle to wide-open throttle. The primary bores (two smaller bores) supply air and fuel during this range.

As the primary throttle valves are opened beyond the off-idle range allowing more air to enter the engine intake manifold, air velocity increases in the carburetor venturi to cause the main metering system to operate as follows:

Fuel from the float bowl flows between the main metering rods and jets into the main fuel wells. It passes upward in the main well and is bled with air by an air bleed located at the top of the well. The fuel is further bled air through calibrated air bleeds located near the top of the well in the carburetor bores. The fuel mixture then passes from the main well through the main discharge nozzles into the boost venturi. At the boost venturi, the fuel mixture then combines with the air entering the engine through the carburetor bores. It then passes as a combustible mixture through the intake manifold and on into the engine cylinders.

The main metering system is calibrated by tapered and stepped metering rods operating in metering jets and also through the main well air bleeds.

Auxiliary Power Piston

An auxiliary power piston and single metering rod, located in front of the main (primary) power piston, is used on all except California cars for light duty power requirements (See Page 6-47 for definition of California cars).

During cruising speeds and light engine loads, manifold vacuum is high. In this period, the engine will run on leaner mixtures than required during heavy loads.

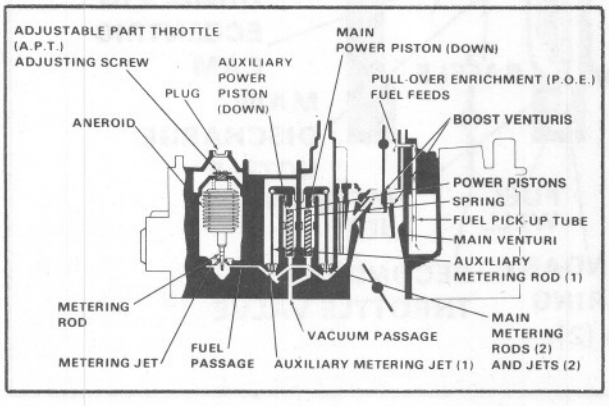


Fig. 6-23 Main Metering System – Federal

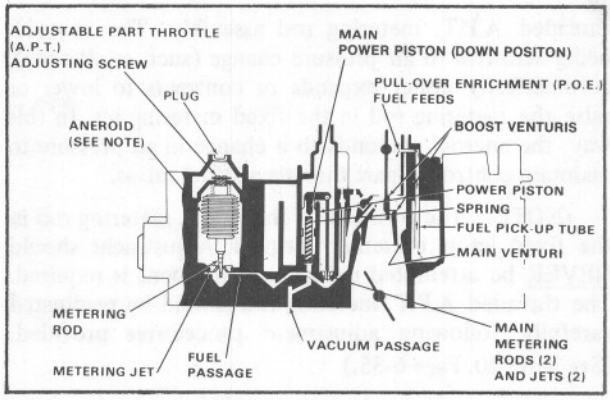


Fig. 6-24 Main Metering System – California

When the vacuum is high, the auxiliary power piston is held downward against spring tension and the larger diameter of the metering rod is in the fixed metering jet orifice. This results in leaner fuel mixtures for economy operation. As engine load increases and engine manifold vacuum drops, spring pressure acting on the auxiliary power piston overcomes the vacuum pull and gradually lifts the metering rod partially out of the fixed metering jet. This enriches the fuel mixture enough to give the desired power to overcome the added load.

Main (Primary) Power Piston

Similar to previous Quadrajet carburetor models, a main (primary) power piston and two (2) metering rods are used for heavy duty power requirements. Operation of the main (primary) power piston is similar to that previously described above for the auxiliary power piston. Vacuum, supplied through a separate channel, acting on the main power piston positions the metering rods in the metering jets during main metering system operation. (See Power System for a complete description of Power System operation.)

Adjustable Part Throttle (A.P.T.)

An adjustable part throttle (A.P.T.) feature is used to maintain very close tolerance of air/fuel mixtures during part throttle operation.

An adjustable aneroid-metering rod assembly, has been added to the float bowl on the choke housing side of all models. (For an explanation of aneroid, see Altitude Compensation below). The adjustable metering rod, with aneroid, provides close tolerance control of fuel flow to the main metering system during the part throttle range.

The A.P.T. adjustment is performed at time of manufacture by turning the threaded aneroid-metering rod assembly, up or down to position the metering rod in a fixed metering jet located at the bottom of the fuel reservoir in the float bowl. This sets the part throttle air/fuel mixture to the desired flow band.

Altitude Compensation

A barometric pressure-sensitive aneroid (sometimes called a "bellows") is included as an integral part of the

threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure change (such as altitude), automatically either expands or contracts to lower or raise the metering rod in the fixed metering jet. In this way, the aneroid responds to a change in air pressure to maintain control of part throttle air/fuel ratios.

(NOTE: The position of the A.P.T. metering rod in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless a replacement is required. The threaded A.P.T. metering rod should be readjusted carefully following adjustment procedures provided. (See Note 20, Page 6-35.)

Pull-Over Enrichment (P.O.E.)

A fuel pull-over enrichment (P.O.E.) circuit is used on all models to supply extra fuel at higher engine speeds. The purpose of the supplementary fuel feeds is to allow the use of lean fuel mixtures during part throttle operation and still provide the extra fuel needed at higher engine speeds for good performance.

Two calibrated holes, on in each primary bore, are located just above the choke valve and are supplied fuel from the float bowl. During high carburetor air flows, low pressure created in the air horn bore pulls fuel from the high speed fuel feeds, supplementing fuel flow from the main metering system. The pull-over enrichment system begins to feed fuel at approximately eight pounds of air per minute and continues to feed at higher engine speeds to provide the extra fuel necessary for good engine performance.

Power System (Fig. 6-25)

The float bowl is revised to provide for a multiple stage power enrichment system.

The multiple stage power enrichment system (all except California cars–See Page 6-47 for definition of "California cars") consists of two power pistons for more sensitive control of air/fuel ratios during light duty engine power requirements while providing richer mixtures during moderate to heavy engine loads.

An auxiliary power piston and single metering rod assembly, (not part of California carburetors) located in front of the main (primary) power piston is used for light duty power requirements. On light throttle opening when manifold vacuum drops to a pre-determined point, the spring under the auxiliary piston overcomes the vacuum pull and raises the piston which lifts the single metering rod out of a fixed metering jet. This provides partial fuel enrichment for light duty engine loads.

During moderate to heavy engine loads when a further drop in manifold vacuum occurs with increased throttle opening, the main (rear) piston spring overcomes the vacuum pull and raises the piston which lifts the two metering rods out of the metering jets for additional fuel enrichment for heavy duty power requirements.

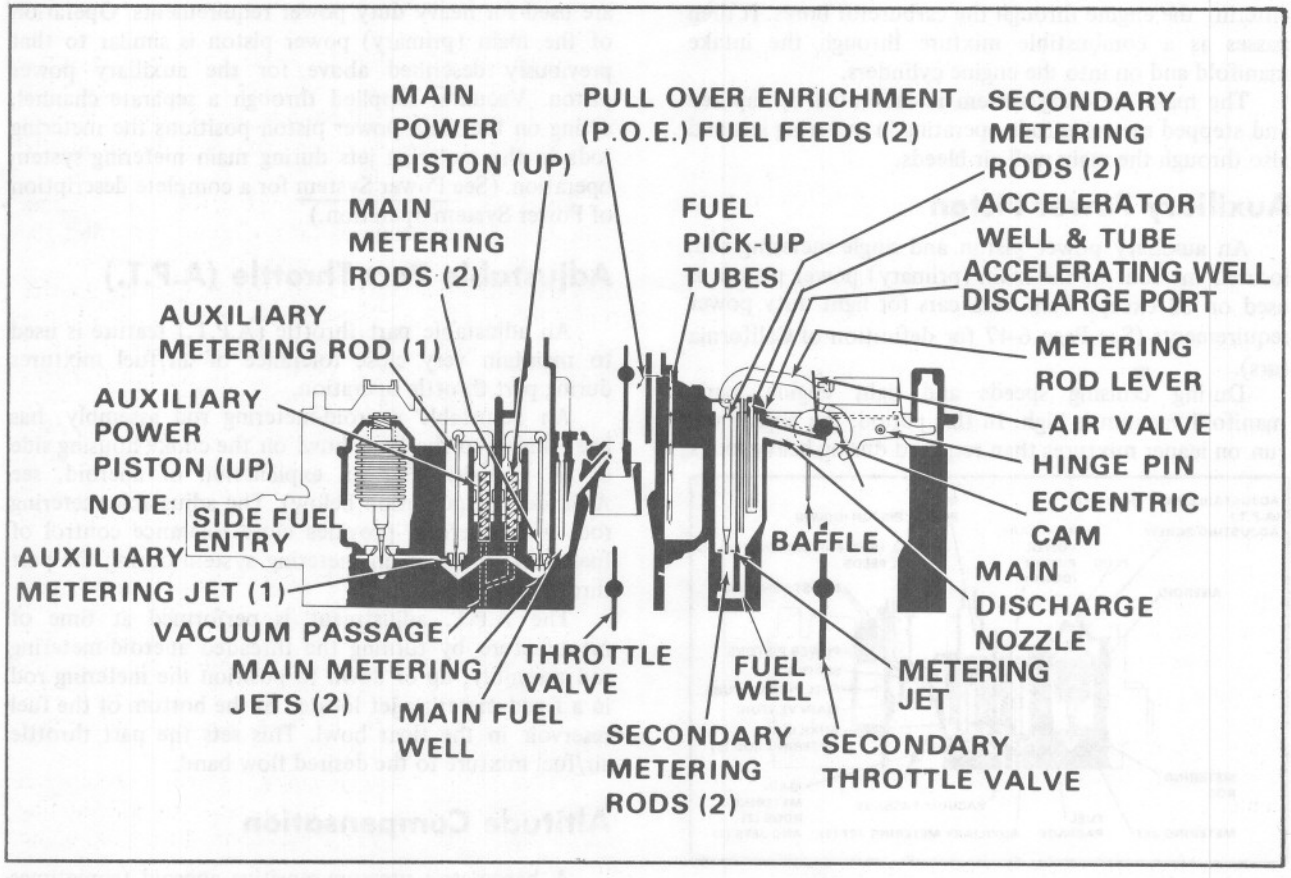


Fig. 6-25 Power System

The multiple stage (two piston) power enrichment system is specifically calibrated for the power requirements by controlling spring rates of each piston. The system requires no adjustment in the field; however, the main (rear) power piston and metering rod assembly and the auxiliary (front) power piston and metering rod assembly are removable for normal cleaning and service replacement as needed.

(NOTE: The main (rear) and auxiliary (front) power piston spring must NOT be interchanged. To prevent mixing of power piston springs at time of carburetor disassembly, lightly wrap a piece of masking tape around the auxiliary power piston spring for identification. Then, on reassembly, remove the tape and install the spring in the front location beneath the auxiliary power piston with single metering rod. The auxiliary power piston spring is the longer of the two springs.)

As the engine speed increases, the primary side of the carubretor can no longer meet the engine air and fuel requirements. To meet these demands, the secondary side of the carburetor is used.

As the secondary throttle valves are opened, engine manifold vacuum (low pressure) is applied directly beneath the air valves. Atmospheric pressure on top of the air valves forces the air valves to open against spring tension and allows metered air to pass through the secondary bores of the carburetor.

When the secondary throttle valves begin to open, the accelerating well ports are exposed to manifold vacuum. The ports immediately start to feed fuel from the accelerating wells and continue to feed fuel until the fuel in the well is gone. This prevents a momentary leanness as the air valve opens and before the secondary nozzles begin to feed fuel.

As the air valves open, a plastic eccentric cam attached to the center of the air valve shaft rotates and, through the metering rod lever, lifts the secondary metering rods out of the secondary orifice plates. The fuel mixture travels from the main wells through the secondary discharge nozzles where it sprays into the secondary bores supplementing the air/fuel mixture delivered from the primary bores. In this way, correct air/fuel mixtures through the secondary bores are controlled by the position of the metering rods in the orifice plates.

There are other features incorporated in the secondary metering system as follows:

1. The main well bleed tubes extend below the fuel level in the main well. These bleed air into the fuel in the well to quickly emulsify the fuel with air for good atomization as it leaves the secondary discharge nozzles.
2. Two baffle plates are used, one in each secondary bore. They extend up and around the secondary fuel discharge nozzles. Their purpose is to provide good fuel distribution at lower air flows by preventing too much fuel from going to the front of the engine.

Operation of Air Valve Dashpot

The air valve dashpot operates off of the front choke vacuum break diaphragm unit. The secondary air valve is connected to the vacuum break unit by a rod, to control the opening rate of the air valve. This delays the air valve opening rate to prevent secondary discharge nozzle "lag".

Whenever manifold vacuum is above approximately 5" to 6" Hg. the vacuum break diaphragm is seated (plunger is fully inward) against spring tension. At this point, the vacuum break rod is in the forward end of the slot in the air valve lever and the air valves are closed.

During acceleration or heavy engine loads, when the secondary throttle valves are open, the manifold vacuum drops. The spring located in the vacuum break diaphragm overcomes the vacuum pull and forces the plunger and link outward which, in turn, allows the air valves to open. The opening rate of the air valves is controlled by the calibrated restriction in the vacuum inlet nipple in the diaphragm cover. This gives the dashpot action required to delay air valve opening enough for efficient fuel flow from the secondary discharge nozzles.

Accelerating Pump System (Fig. 6-26)

During quick acceleration when the throttle is opened rapidly, the air flow and manifold vacuum change almost instantaneously. The fuel, which is heavier, tends to lag behind causing a momentary leaness. The accelerator pump is used to provide the extra fuel necessary for smooth operation during this time.

The accelerating pump system consists of a spring loaded pump plunger and pump return spring, operating in a fuel well. The pump plunger is operated by a pump lever on the air horn which is connected directly to the throttle lever by a pump rod.

When the pump plunger moves upward in the pump well, as happens during throttle closing, fuel from the float bowl enters the pump well through an opening in the side of the pump well. The pump cup is the floating type. (The cup moves up and down on the pump plunger head - see inset.) When the pump plunger is moved upward, the flat on the top of the cup unseats from the flat on the plunger head and allows free movement of fuel through the inside of the cup into the bottom of the pump well. This also vents any vapors which may be in the bottom of the pump well so that a solid charge of fuel can be maintained in the fuel well beneath the plunger head.

When the throttle valves are opened, the connecting linkage forces the pump plunger downward. The pump cup seats instantly and fuel is forced through the pump discharge passage where it unseats the pump discharge check ball and passes on through the passage to the pump jets, located in the air horn, where the fuel sprays into the venturi of each bore.

An expander (garter) spring, located beneath the pump plunger cup, is used to assist in maintaining constant pump cup to pump wall contact for good pump fuel delivery.

The pump plunger is spring loaded - the upper duration spring is balanced with the bottom pump

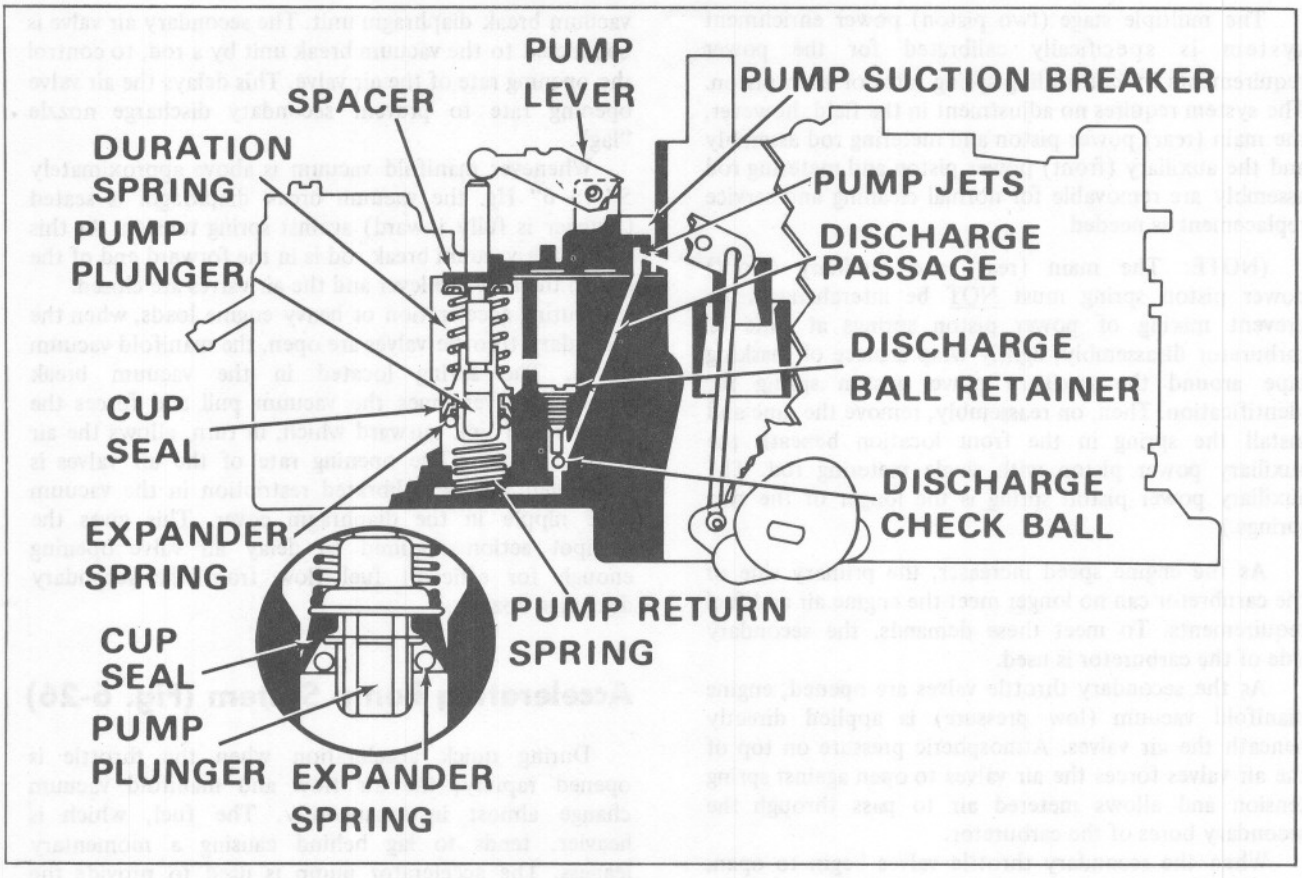


Fig. 6-26 Accelerating Pump System

return spring so that a smooth sustained charge of fuel is delivered during acceleration.

The pump discharge check ball seats in the pump discharge passage during upward motion of the pump plunger so that air will not be drawn into the passage; otherwise, a momentary lag in acceleration could result.

During high speed operation, a vacuum exists at the pump jets. A cavity just beyond the pump jets is vented to the top of the air horn, outside the carburetor bores. This acts as a suction breaker so that when the pump is not in operation, fuel will not be pulled out of the pump jets into the venturi area. This insures a full pump stream when needed and prevents any fuel "pull-over" from the pump discharge passage.

Choke System (Fig. 6-27)

An electric choke assembly is installed in a choke housing which is mounted on the carburetor float bowl. In addition, a dual vacuum break system, consisting of a front and rear vacuum break unit, is used on all models for improved choke operation.

The choke system operates as follows:

The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold.

To close the choke valve, depress the accelerator pedal completely to allow the fast idle cam follower lever to clear the steps on the fast idle cam. At this point, tension of the thermostatic coil will rotate the choke valve to the closed position and through rotation of the upper choke lever and movement of the choke rod, the cam follower lever comes to rest on the high step of the fast idle cam.

During engine cranking, the closed choke valve restricts air flow through the carburetor to provide a rich starting mixture.

When the engine starts and is running, manifold vacuum is applied to both vacuum break diaphragm units mounted on the side of the float bowl.

The front vacuum break diaphragm opens the choke valve to a point where the engine will run without loading or stalling lean. When the choke valve moves to the vacuum break position, the fast idle cam follower will drop from the high step on the fast idle cam to the next lower step (second step), when the throttle is opened.

As the engine manifold is wetted and friction decreases after start, the rear vacuum break gradually opens the choke valve a little further to prevent stalling.

The rear vacuum break diaphragm unit includes a tension (bucking) spring in the diaphragm plunger head to off-set tension of the thermostatic coil. The bucking spring assists in controlling choke valve opening through the thermostatic coil so that leaner mixtures (large choke opening) are maintained during warmer temperatures and richer mixtures (small choke opening) during colder temperatures.

The rear vacuum break unit is delayed in operation by an internal bleed check valve. The bleed check valve delays further opening of the choke valve a few seconds until the engine will run at slightly leaner mixtures. At

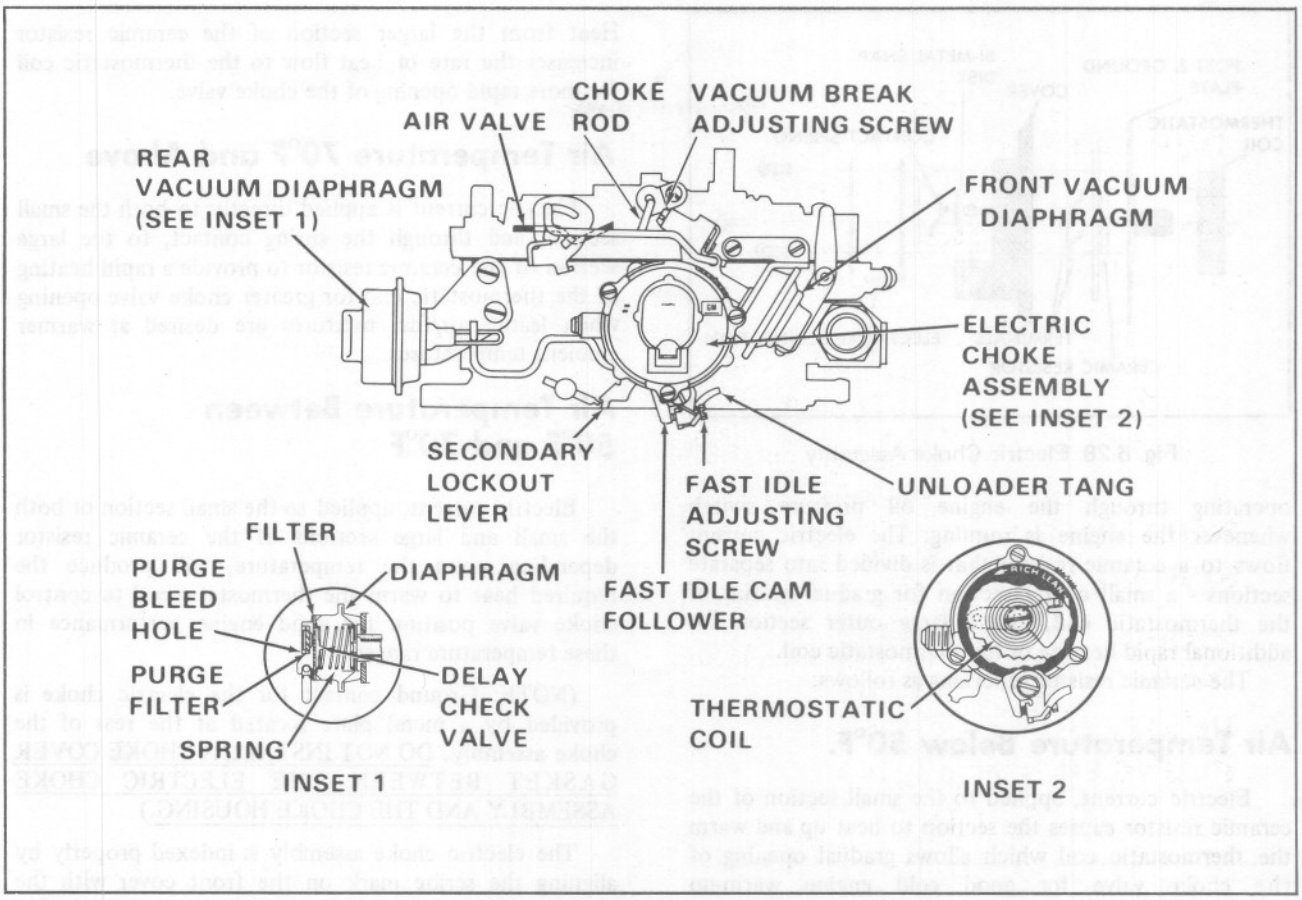


Fig. 6-27 Choke System

this point, further choke valve opening is controlled by air flow against the off-set choke valve and relaxing tension of the thermostatic coil as it is heated.

A clean air purge feature is added to the rear vacuum break diaphragm unit. A filter element is installed internally with a small bleed hole located in the end cover of the diaphragm unit.

During engine operation, vacuum acting upon the diaphragm unit pulls a small amount of filtered air through the bleed hole to purge the system of any fuel vapors or dirt contamination which might be pulled into the bleed check valve located inside the diaphragm unit.

An electrically actuated ceramic resistor in an electric choke assembly heats the thermostatic coil which gradually relaxes coil tension to allow the choke valve to continue opening with both inlet air pressure pushing on the off-set choke valve and the weight of the choke linkage pulling the valve open.

As the thermostatic coil warms up, the choke coil lever in the housing moves the choke rod up in the slot in the upper choke lever to open the choke valve further to the near wide open position, while still keeping the cam follower lever on the low step of the fast idle cam. In this way, the fast idle speed is maintained long enough to keep the engine from stalling yet allows use of a choke coil which lets the choke valve open quickly.

The secondary throttle valves are locked out during choke operation and the engine warm-up period. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is completely off the steps of the fast idle cam. As the fast idle cam drops down, it strikes the secondary throttle valve lock-out lever and pushes it away from the secondary throttle valve lock-out pin. This allows the secondary throttle valves to open for hot engine power requirements.

The choke system is equipped with an unloader feature which is designed to open the choke valve partially, should the engine become flooded or loaded. To unload the engine, the accelerator pedal must be depressed to the floor so that the throttle valves are held wide open.

A tang on the lever on the choke side of the primary throttle shaft contacts the fast idle cam and through the intermediate choke shaft forces the choke valve slightly open. This allows extra air to enter the carburetor bores and pass on into the engine manifold to lean out the fuel mixture so that the engine will start.

Electric Choke Assembly (Fig. 6-28)

As mentioned earlier, a ceramic resistor in the electric choke assembly is heated by an electric current and the resistor warms the thermostatic coil for precise timing of choke valve opening for good engine warm-up performance.

The electric choke operates as follows:

The electric choke receives an electric current

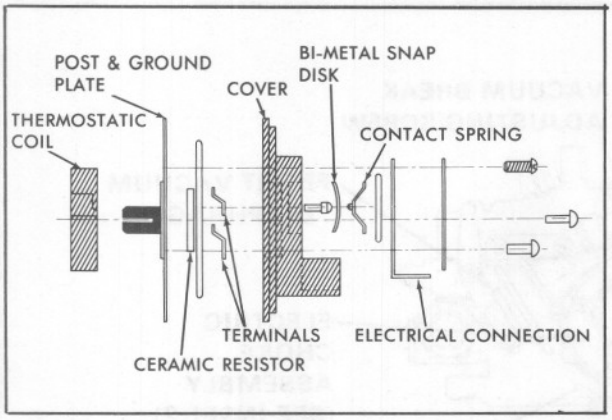


Fig. 6-28 Electric Choke Assembly

operating through the engine oil pressure switch whenever the engine is running. The electric current flows to a ceramic resistor that is divided into separate sections - a small center section for gradual heating of the thermostatic coil, and a large outer section for additional rapid heating of the thermostatic coil.

The ceramic resistor functions as follows:

Air Temperature Below 50°F.

Electric current, applied to the small section of the ceramic resistor causes the section to heat up and warm the thermostatic coil which allows gradual opening of the choke valve for good cold engine warm-up performance. As the small section of the ceramic resistor continues to produce heat, a temperature- sensitive bi-metal disk causes a spring loaded contact to close also applying electric current to the large section of the ceramic resistor causing the large section to heat up. Heat from the larger section of the ceramic resistor increases the rate of heat flow to the thermostatic coil for more rapid opening of the choke valve.

Air Temperature 70°F and Above

Electric current is applied directly to both the small section, and through the spring contact, to the large section of the ceramic resistor to provide a rapid heating of the thermostatic coil for greater choke valve opening when leaner air/fuel mixtures are desired at warmer ambient temperatures.

Air Temperature Between 50°F and 70°F

Electric current, applied to the small section or both the small and large sections of the ceramic resistor depending upon the temperature, will produce the required heat to warm the thermostatic coil to control choke valve position for good engine performance in these temperature ranges.

(NOTE: Ground contact for the electric choke is provided by a metal plate located at the rear of the choke assembly. DO NOT INSTALL A CHOKE COVER GASKET BETWEEN THE ELECTRIC CHOKE ASSEMBLY AND THE CHOKE HOUSING.)

The electric choke assembly is indexed properly by aligning the scribe mark on the front cover with the specified index mark on the choke housing. (See Adjustments, page 6-46).

The electric choke and thermostatic coil are serviced as a complete assembly and may be checked as described in Note 39.

SERVICE INFORMATION

17. Carburetor Removal and Installation

a. Removal

1. Remove air cleaner and disconnect electrical lead to choke.
2. Disconnect distributor vacuum advance hose from vacuum break tee.
3. Disconnect hoses at EGR (J), purge (K) and bowl vent (T) nipples on front of carburetor.
4. Disconnect throttle linkage and cruise control linkage if so equipped.
5. Working at rear of carburetor, remove modulator hose (O) and using a back-up wrench, remove power brake line.
6. Remove front vacuum break unit to avoid damaging the vacuum break unit when breaking the fuel line nut.
7. Remove fuel line using a back-up wrench or tool J-23443 as required.
8. Remove mounting screws and lift carburetor to a position where PCV hose may be removed and remove carburetor.
9. Discard carburetor gasket.

b. Installation

1. Clean mounting surface of intake manifold and carburetor of any dirt, carbon or gasket material.
2. Place a new carburetor gasket on manifold with side marked "Top" or with manufacturers trade mark facing up.
3. Position carburetor near manifold and connect PCV hose to nipple "L" on the throttle body. Secure with clamp.
4. Position carburetor to manifold and downshift switch and secure with four screws. Tighten screws evenly to 11 foot-pounds in front and 15 foot-pounds in rear.
5. Install fuel line using a tubing wrench.
6. Install front vacuum break unit.
7. Install the following hoses as indicated:

(NOTE: Vacuum hose routing is shown in Fig. 6-29.)

a. EGR hose to nipple "J".
b. Canister purge hose to nipple "K".

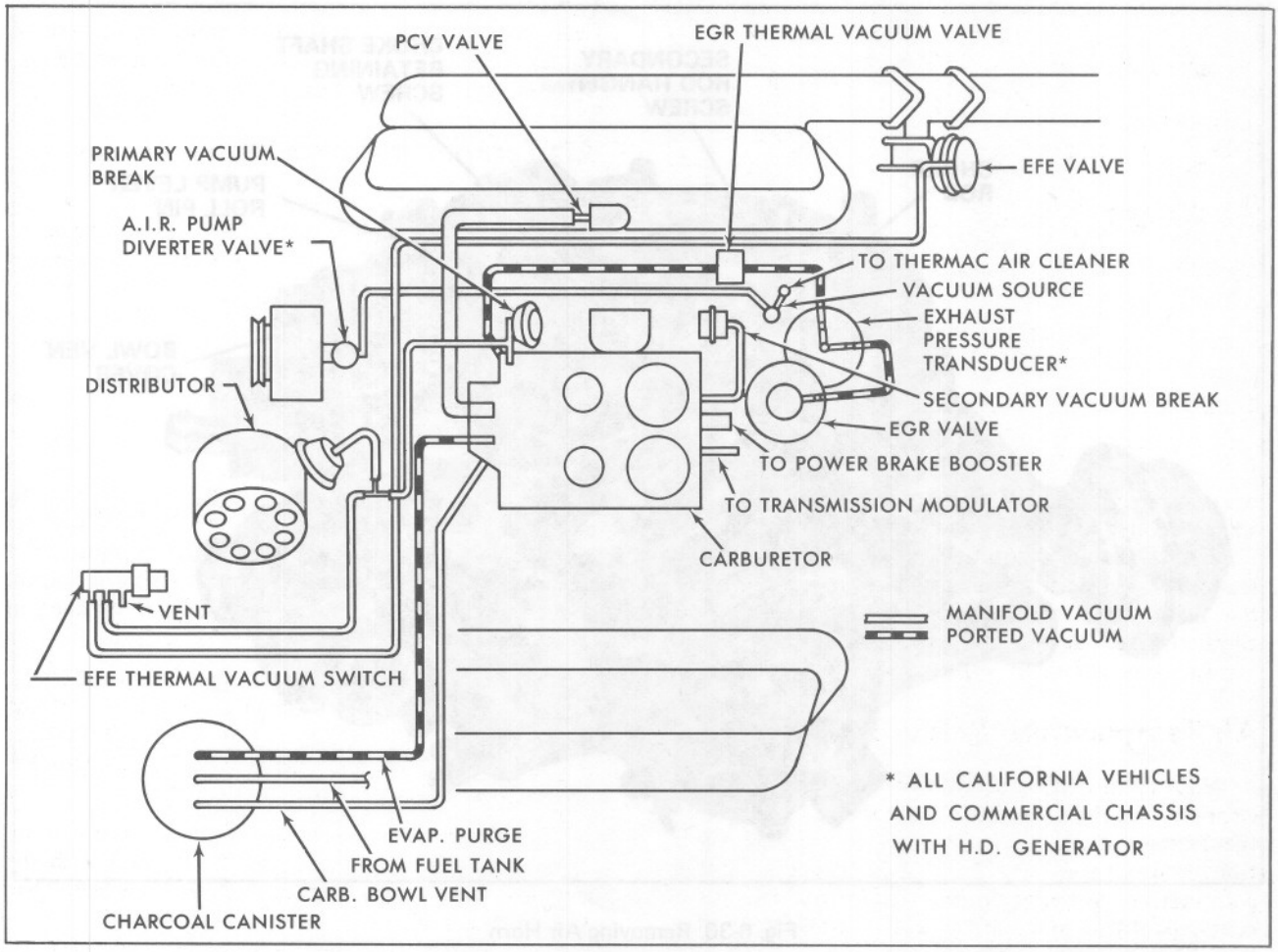


Fig. 6-29 Vacuum Hose Routing

c. Bowl vent hose to nipple "T".
d. Vacuum modulator hose to nipple "D".
e. Distributor vacuum advance hose to vacuum break "Tee" (Nipple "A").
f. Power brake hose to fitting at rear of carburetor (port "V").

(NOTE: If inverted flare tube connector in throttle body has been loosened or replaced, do not tighten to greater than 125 inch-pounds as distortion of the throttle body may occur.)

8. Connect throttle linkage and return spring. Connect cruise control linkage on cars so equipped.
9. Connect electrical lead to choke coil.
10. Install air cleaner.

18. Carburetor Disassembly

(NOTE: Before performing any service on the carburetor, it is essential that the carburetor be placed on a holding fixture such as J-8328-1. Without the use of the holding fixture it is possible to bend or nick throttle valves.)

a. Air Horn Removal

1. Remove upper choke lever from the end of choke shaft by removing retaining screw, Fig. 6-30. Then rotate upper choke lever to remove choke rod from slot in lever.

2. Remove choke rod from lower lever inside the float bowl casting.

(NOTE: Remove rod by holding lower lever outward with small screwdriver and twisting rod counterclockwise.)

3. Remove "T" shaped vacuum hose from front vacuum break unit.
4. Remove secondary metering rods by removing the small screw in the top of the metering rod hanger. Lift upward on metering rod hanger until the secondary metering rods are completely out of the air horn. Metering rods may be disassembled from the hanger by rotating ends out of the holes in the end of the hanger, Fig. 6-30.
5. Using a pin punch or J-25322, drive pump lever pivot roll pin inward until pump lever can be removed from air horn, Fig. 6-31. Then remove pump lever from pump rod.

CAUTION: *Do not remove roll pin during removal or disassembly of air horn.*

6. Remove nine air horn to bowl attaching screws:

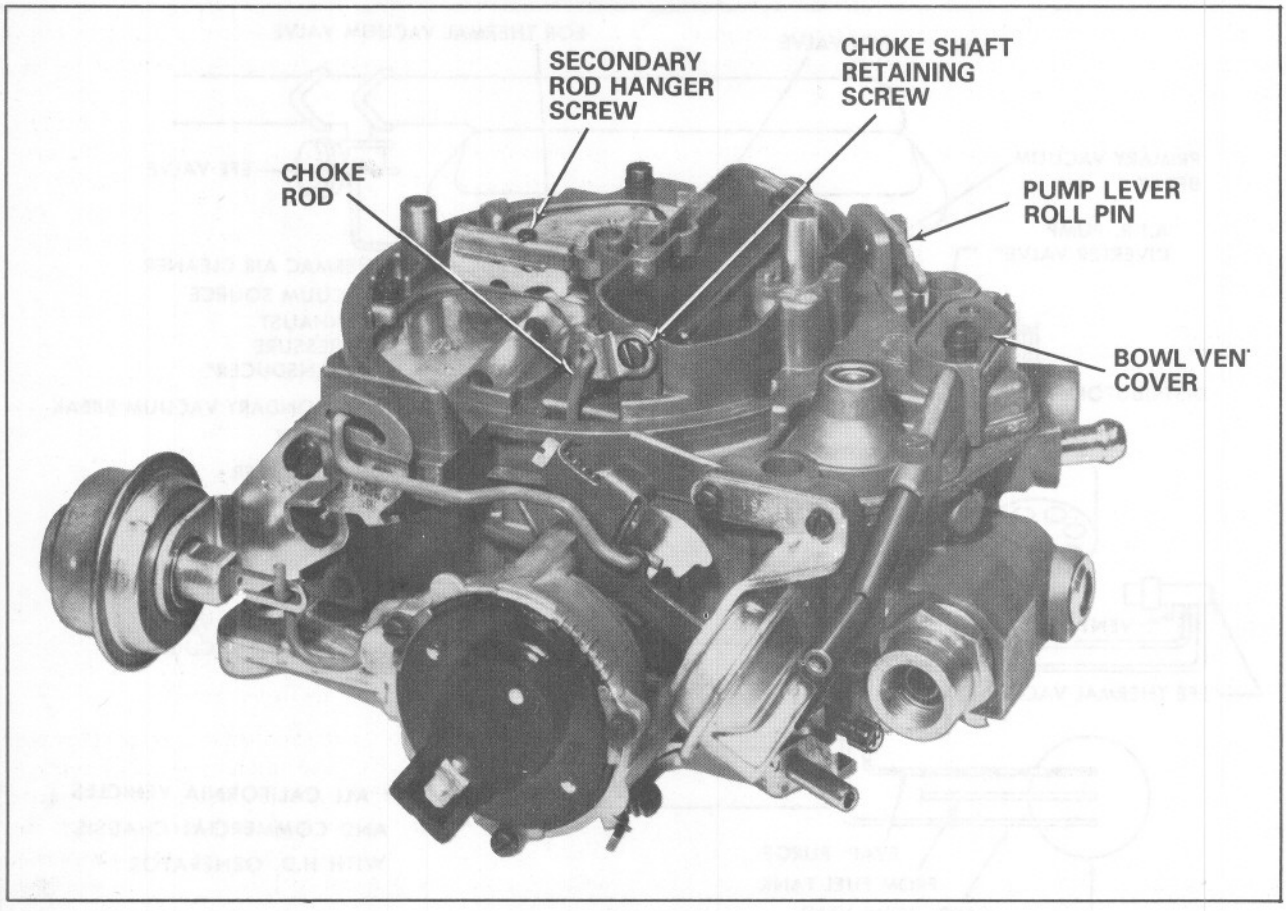


Fig. 6-30 Removing Air Horn

two attaching screws are located next to the venturi. (Two long screws, five short screws, and two countersunk screws.) Remove bowl vent valve cover, spring and gasket from beneath front air horn screw, Fig. 6-32.

7. Remove air horn from float bowl by lifting straight up. The air horn gasket should remain on the float bowl for removal later.

CAUTION: *When removing air horn from float bowl, use care to prevent bending the small tubes protruding from the air horn. These tubes are permanently pressed into the air horn casting. DO NOT REMOVE.*

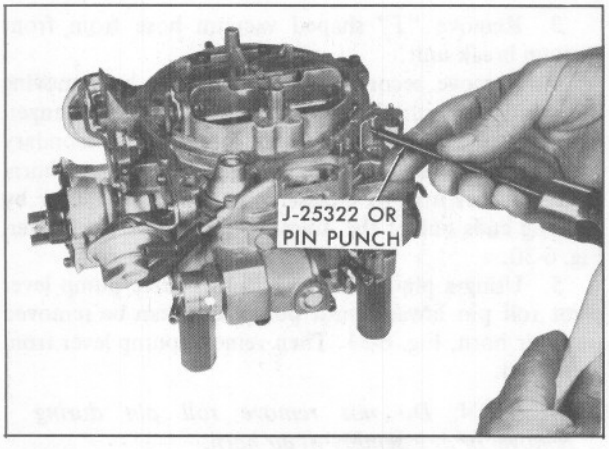


Fig. 6-31 Removing Roll Pin

b. Air Horn Disassembly

1. If not removed previously, remove front vacuum

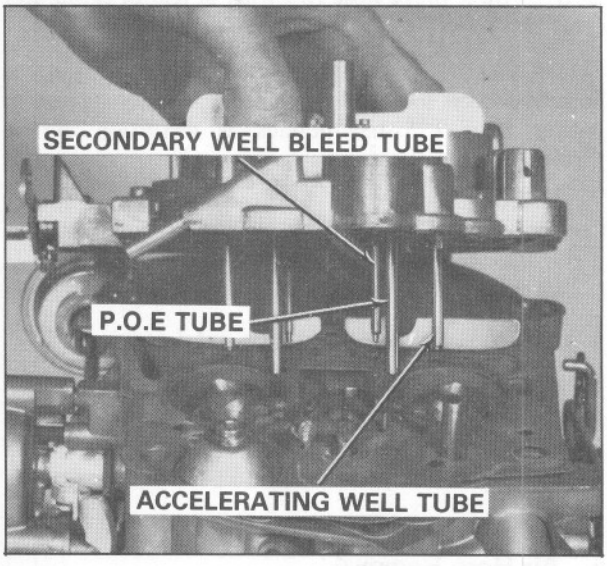


Fig. 6-32 Airhorn Tubes

break bracket attaching screws. The diaphragm assembly may now be removed from the air valve dashpot rod and the dashpot rod from the air valve lever.

CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

2. Further disassembly of the air horn is not required or recommended for cleaning purposes. If part replacement is required, proceed as follows:

CAUTION: The bowl vent valve and actuating arm are permanently retained in the air horn. DO NOT REMOVE.

3. Remove staking on (2) choke valve attaching screws, then remove choke valve and shaft from air horn.

(NOTE: Air valves and air valve shaft should not be removed. However, if it is necessary to replace the air valve closing spring or center plastic eccentric cam, a repair kit is available. Instructions for assembly are included in the repair kit.)

c. Float Bowl Disassembly

1. Carefully loosen air horn gasket and lift one corner. Remove pump plunger from pump well, Fig. 6-33. Remove bowl vent spacer from pump plunger stem.

2. If used, hold auxiliary (front) power piston down and swing hanger toward front of carburetor while at the same time pushing rearward on metering rod compressing spring, until groove in rod aligns with slot in hanger, Fig. 6-34. Then remove rod from hanger and lift rod out of fixed metering jet.

3. Hold main (rear) power piston down and swing auxiliary (front) power piston hanger rearward until it touches the main power piston. Then release main power piston.

4. Remove air horn gasket by lifting tab of gasket from beneath the main (rear) power piston hanger, being careful not to distort spring holding the main metering rods.

5. Remove pump return spring from pump well.

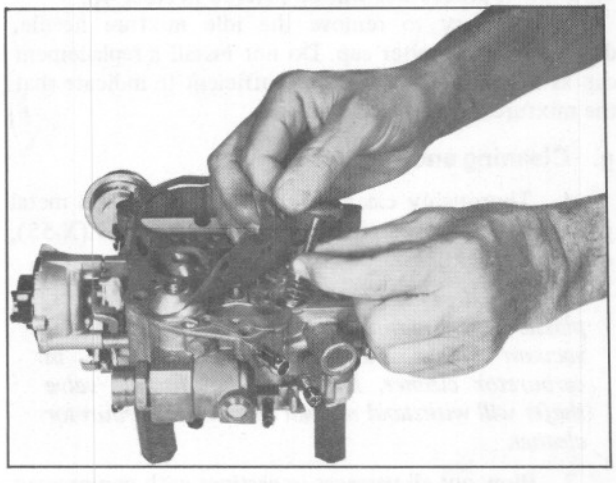


Fig. 6-33 Removing Accelerator Pump

6. Remove main (rear) power piston and metering rods by depressing piston stem and allowing it to snap free.

(NOTE: The power piston can be easily removed by pressing the piston down and releasing it with a snap. This will cause the power piston spring to snap the piston up against the retainer. This procedure may have to be repeated several times. Remove the power piston spring from the well.)

CAUTION: *Do not remove power piston by using pliers on metering rod hanger.*

7. Remove metering rods from main (rear) power piston by disconnecting tension spring from top of each rod, then rotate rod to remove from hanger.

CAUTION: *Use care when disassembling rods to prevent distortion of tension spring and/or metering rods. Note carefully position of tension spring for later reassembly, Fig. 6-34.*

8. Remove auxiliary (front) power piston by depressing piston stem and allowing it to snap free (following procedure noted in Step 6, above). Remove auxiliary power piston spring from the well.

(NOTE: The main (rear) and auxiliary (front) power piston springs must NOT be interchanged. To prevent mixing of springs, lightly wrap a piece of masking tape around the auxiliary power piston spring for identification. The auxiliary (front) power piston spring is the longer of the two springs.)

9. Remove plastic filler block over float valve.

10. Remove float assembly and float needle by pulling up on retaining pin. Remove float needle seat and gasket using Seat Remover, J-22769, Fig. 6-35.

11. Remove two cover screws and carefully lift the A.P.T. metering rod, with aneroid, from the float bowl, Fig. 6-34.

CAUTION: *The A.P.T. metering rod with aneroid, is extremely fragile. Use care in handling. Do not immerse aneroid in carburetor cleaner. The A.P.T. metering rod is pre-set at the factory and NO attempt should be made to re-adjust in the field. If replacement is necessary, see A.P.T. Metering Rod Replacement, Note 20.*

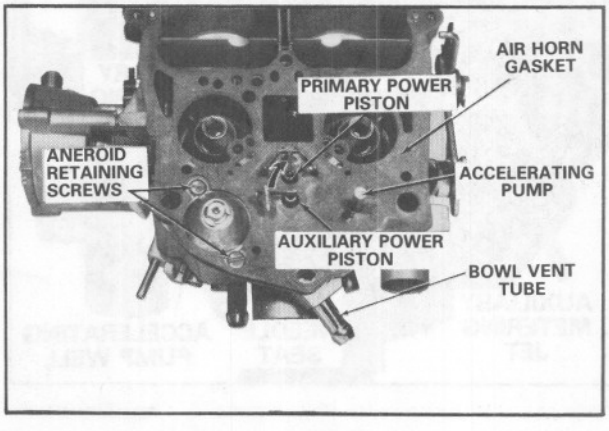


Fig. 6-34 Float Bowl

Fig. 6-35 Removing Inlet Valve Seat

12. Remove primary main metering jets only if necessary.

(NOTE: No attempt should be made to remove the auxiliary (front) power piston metering jet, A.P.T. metering jet, or secondary metering plates, Fig. 6-36. These jets are fixed and, if damaged, float bowl replacement is required.)

13. Remove pump discharge check ball retainer and check ball.

14. Remove baffle from secondary side of bowl.

15. Remove baffle from side of pump well.

16. Remove hose from rear vacuum break control assembly. Remove two screws from rear vacuum break bracket and rotate the assembly to remove vacuum break rod from slot in plunger head.

CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

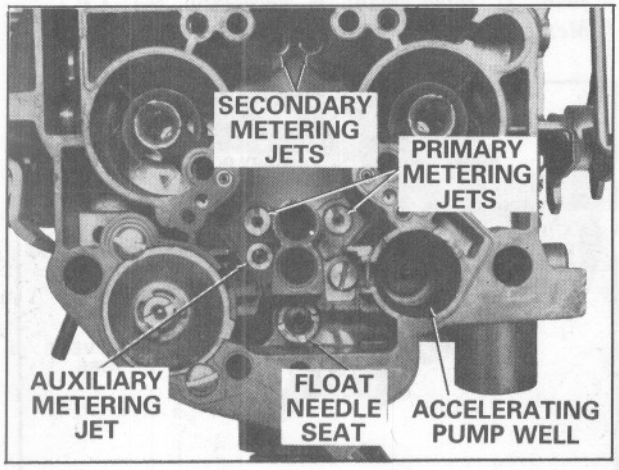


Fig. 6-36 Metering Jets

17. Remove vacuum break rod by holding down on fast idle cam (hot idle position); move end of vacuum break rod away from float bowl then disengage rod from hole in intermediate choke lever.

d. Choke Disassembly

1. Remove three (3) attaching screws and retainers from electric choke cover and coil assembly. Then pull straight outward and remove electric choke cover and coil assembly from choke housing.

2. Remove choke housing assembly from float bowl by removing retaining screw and washer assembly inside the choke housing. The complete choke assembly can be removed from the float bowl by sliding outward.

3. Remove secondary throttle valve lock-out lever from float bowl.

4. Remove lower choke lever from inside float bowl cavity by inverting bowl.

5. To disassemble intermediate choke shaft from choke housing, remove coil lever retaining screw at end of shaft inside the choke housing. Then remove thermostatic coil lever from flats on intermediate choke shaft. Remove intermediate choke shaft from the choke housing by sliding outward. The fast idle cam can now be removed from the intermediate choke shaft.

CAUTION: Remove the cup seal from the float bowl for bowl cleaning purposes.

e. Disassembly Of Remaining Float Bowl Parts

1. Remove fuel inlet nut, gasket, filter and spring.

2. Remove throttle body by removing two throttle body to bowl attaching screws.

3. Carefully remove throttle body to bowl insulator gasket.

f. Throttle Body Disassembly

1. Remove pump rod from throttle lever.

2. DO NOT REMOVE idle mixture limiter caps, unless it is necessary to replace the mixture needles or normal soaking and air pressure fails to clean the idle passages. If the idle mixture needles are removed, adjustment procedures will be covered in Note 40.

If necessary to remove the idle mixture needle, destroy plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the mixture has been re-adjusted.

g. Cleaning and Inspection

1. Thoroughly clean carburetor castings and metal parts in an approved cleaner, such as Carbon X(X-55), or its equivalent.

CAUTION: *The electric choke, rubber parts, plastic parts, pump plungers, aneroid and choke vacuum breaks should not be immersed in carburetor cleaner. However, the throttle valve shafts will withstand normal cleaning in carburetor cleaner.*

2. Blow out all passages in castings with compressed air.

CAUTION: *Do not pass drills through jets or passages.*

3. Examine float needle and seat for wear. Replace, if necessary, with new float needle and seat assembly.
4. Inspect upper and lower surfaces of carburetor castings for damage.
5. Inspect holes in levers for excessive wear or out of round conditions. If worn, levers should be replaced.
6. Examine fast idle cam for wear or damage.
7. Check air valve for binding conditions. If air valve is damaged, air horn assembly must be replaced.
8. Check all throttle levers and valves for binds or other damage.

19. Carburetor Assembly

a. Throttle Body Assembly

1. If removed, install idle mixture needles and springs until seated. Back out the mixture needles four turns as a preliminary idle adjustment. Final adjustment must be made on the engine using the procedures described in Note 40.
2. Install lower end of pump rod in throttle lever by aligning tang on rod with slot in lever. End of rod should point outwards towards throttle lever.

b. Float Bowl Assembly

1. Install new throttle body to bowl gasket over two locating dowels on bowl.
2. Install throttle body, making certain throttle body is properly located over dowels on float bowl, then install two throttle body to bowl screws and tighten evenly and securely.
3. Place carburetor on holding fixture, J-8328-1.
4. Install fuel inlet filter spring, filter, new gasket and inlet nut and tighten nut to 18 ft. lbs. Open end of filter faces toward fuel line.

CAUTION: *Tightening beyond specified torque can damage gasket.*

(NOTE: Ribs on closed end of filter element prevent filter from being installed incorrectly unless forced.)

c. Choke Housing Assembly To Float Bowl

1. Install new cup seal into insert on side of float bowl for intermediate choke shaft. Lip on cup seal faces outward.
2. Install secondary throttle valve lock-out lever on boss on float bowl with recess in hole in lever facing carburetor bowl, Fig. 6-37.
3. Install fast idle cam onto the intermediate choke shaft (steps on fast idle cam face downward), Fig. 6-38.
4. Carefully install fast idle cam and intermediate choke shaft assembly in choke housing, Fig. 6-38, then install thermostatic coil lever onto flats on intermediate choke shaft. Inside thermostatic choke coil lever is properly aligned when both inside and outside levers face towards fuel inlet. Install inside lever retaining screw into end of intermediate choke shaft. Tighten securely.
5. Install lower choke rod lever into cavity in float bowl. Install choke housing to bowl sliding intermediate choke shaft into lower choke lever.

(NOTE: Tool J-23417 can be used to hold the lower choke lever in correct position while installing the choke housing, Fig. 6-39.)

6. Install choke housing retaining screw and washer and tighten securely.

(NOTE: The intermediate choke shaft lever and fast idle cam are in correct relation when the tang on lever is beneath the fast idle cam. Do not install electric choke cover and coil assembly until inside coil lever is adjusted. (See Note 27.)

d. Completion Of Float Bowl Assembly

1. Holding down on fast idle cam (hot idle position), install end of rear vacuum break rod in hole in intermediate choke lever.

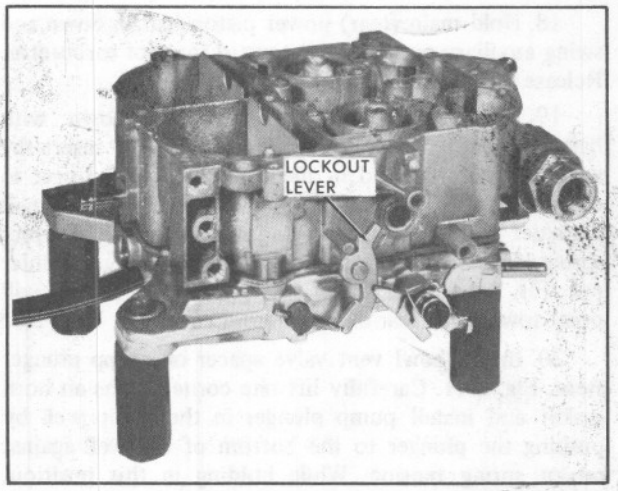


Fig. 6-37 Secondary Lockout Linkage

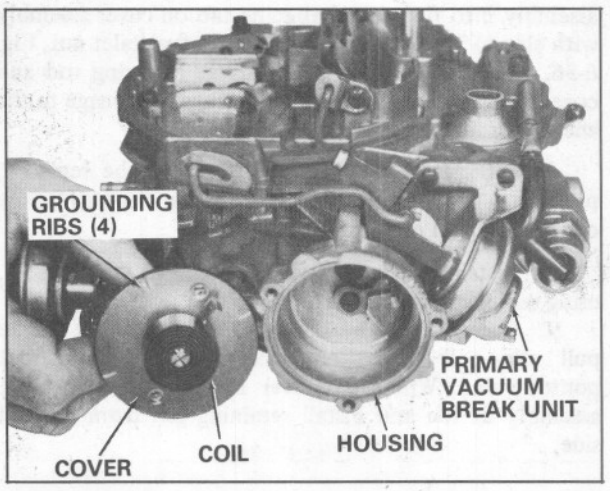


Fig. 6-38 Choke Linkage

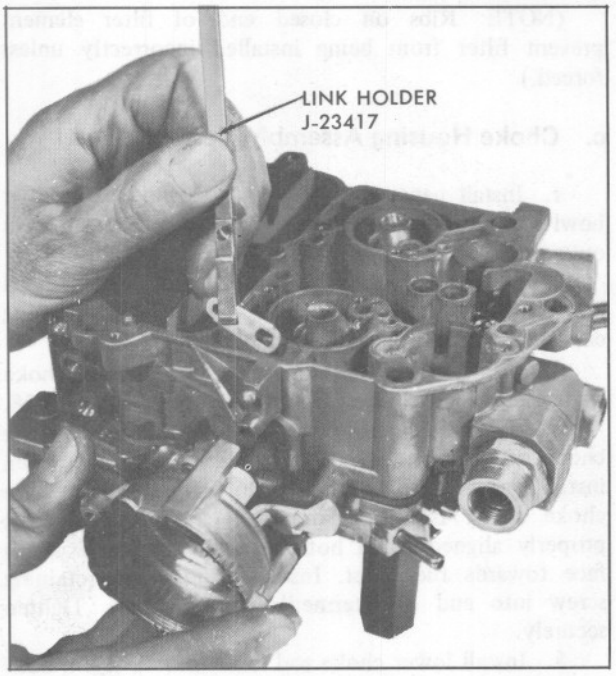


Fig. 6-39 Holding Choke Link

2. Install end of rear vacuum break rod in slot in rear vacuum break plunger head. Then install rear vacuum break control and bracket assembly to float bowl using two (2) attaching screws. Tighten securely.

(NOTE: Do not attach vacuum break hose until after the vacuum break adjustment is completed (See Note 31.)

3. Install air baffle in secondary side of float bowl with notches toward the top. Top edge of baffle at the inserting slots must be flush with bowl casting.

4. Install baffle in side of pump well with slot towards bottom.

5. Install pump discharge check ball and retainer in passage next to pump well. Tighten retainer securely.

6. Install primary main metering jets, Fig. 6-36 (if removed).

7. Carefully install A.P.T. metering rod and cover assembly into float bowl aligning tab on cover assembly with slot in float bowl closest to the fuel inlet nut, Fig. 6-36. Use care installing the A.P.T. metering rod and cover assembly into float bowl to prevent damage to the aneroid or metering rod tip.

(NOTE: If A.P.T. metering rod is to be replaced, perform adjusting procedure described in Note 20 before continuing with carburetor assembly.)

8. Install new needle seat assembly, with gasket, using seat installer J-22769, Fig. 6-35.

9. Install needle by sliding float lever under needle pull clip–pull clip should be installed from float pontoon end. With float lever in pull clip, hold float assembly at toe and install retaining pin from aneroid side.

CAUTION: *Do not install float needle pull clip into holes in float arm.*

10. Adjust float level as described in Note 21.

11. Install plastic filler block over float needle, pressing downward until properly seated.

12. Install main power piston spring in power piston well (rear location-short spring.)

If main metering rods were removed from hanger, reinstall making sure tension spring is connected to top of each rod, Fig. 6-34. Install main power piston assembly in rear well with metering rods properly positioned in metering jets. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top is flush with the top of the bowl casting. If necessary, using a drift punch and small hammer, tap retainer lightly in place.

13. Remove masking tape, used for identification, and install auxiliary power piston spring in power piston well (front location-long spring).

Install auxiliary power piston assembly in front well without metering rod. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top is flush with the top of the bowl casting. If necessary, using a drift punch and small hammer, tap retainer lightly in place.

14. Install baffle into slot inside of pump well. Notch in baffle should be down when installed.

15. Install accelerator pump return spring in pump well.

16. Hold main (rear) power piston down and swing auxiliary power piston hanger rearward until it touches the main power piston. Then release main power piston.

17. Install air horn gasket by carefully sliding tab of gasket around main metering rods and beneath the main power piston hanger. Position gasket over the two dowel pins on the float bowl.

(NOTE: Two different air horn gaskets are used on 1975 carburetors. The two gaskets, Fig. 6-40, differ in that the gasket for dual power piston applications (all except California – See Page 6-47 for definition of California carburetors) has an extra hole forward of the main metering rod hanger for the auxiliary hanger as shown in Fig. 6-40. Be sure to use the correct gasket for carburetor being worked on.)

18. Hold main (rear) power piston hanger down and swing auxiliary power piston toward front of carburetor. Release main power piston.

19. Holding auxiliary power piston down with hanger toward front of carburetor, carefully insert the auxiliary metering rod in the fixed jet. Using finger to compress spring toward end of rod, slide rod onto small diameter groove in hanger and release spring. Correct spring location is on front side of hanger facing fuel inlet nut, Fig. 6-34. The hanger when properly installed will point toward the rear of the aneroid cover.

20. Install bowl vent valve spacer on pump plunger stem, Fig. 6-41. Carefully lift one corner of the air horn gasket and install pump plunger in the pump well by pushing the plunger to the bottom of the well against return spring tension. While holding in this position, align pump plunger stem with hole in gasket and press gasket in place.

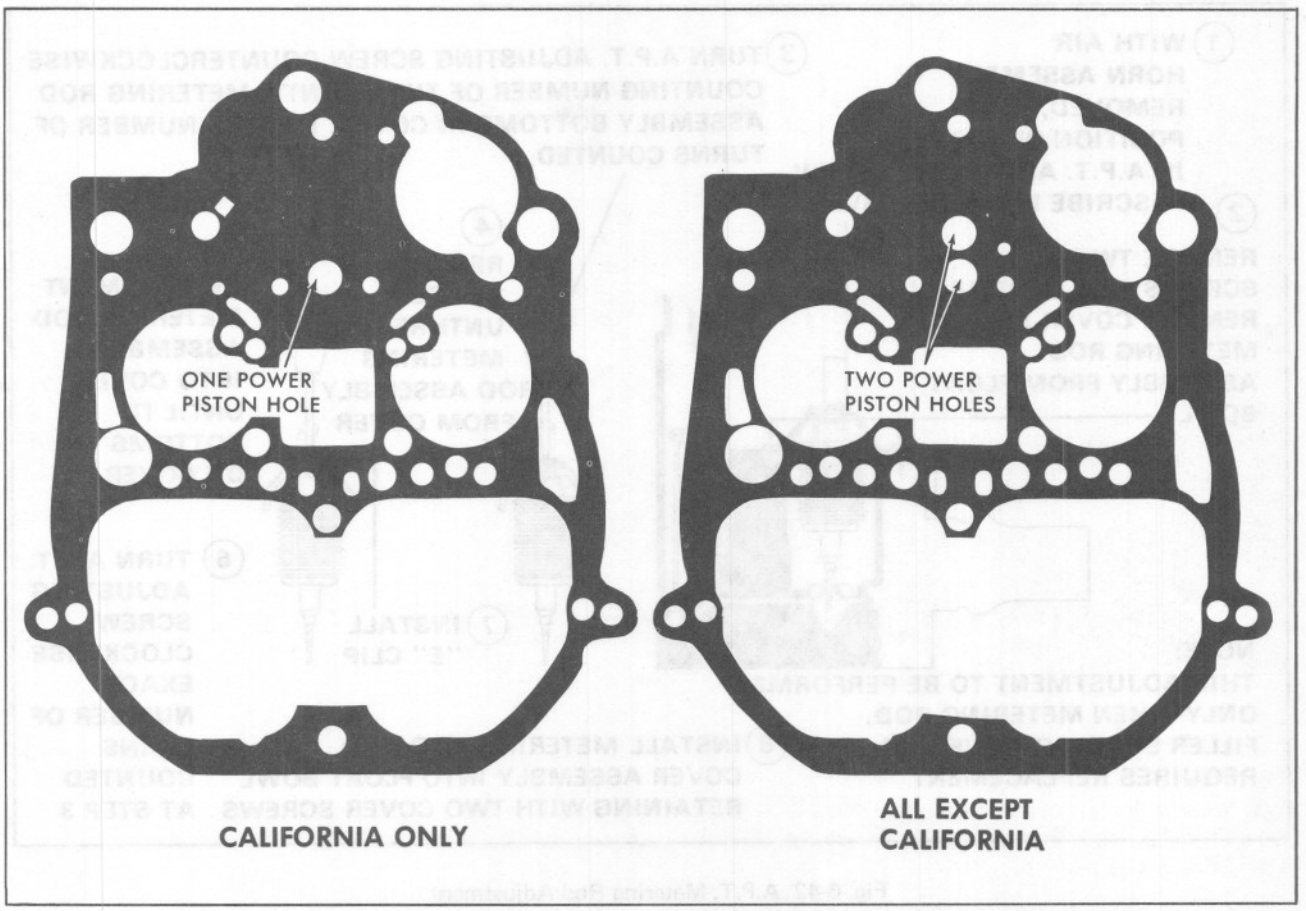


Fig. 6-40 Air Horn Gaskets

20. A.P.T. Metering Rod Replacement (Fig. 6-42)

(NOTE: The position of the A.P.T. metering rod, with aneroid, in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless replacement of the A.P.T. metering rod assembly is required due to damage to the rod, or failure of the original aneroid. The threaded A.P.T. metering rod assembly may be replaced as follows:)

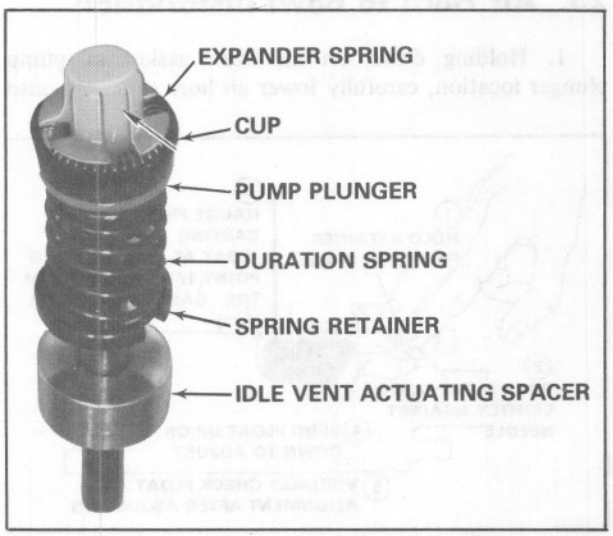


Fig. 6-41 Accelerator Pump

1. Note position of slot in adjusting screw of metering rod assembly and lightly scribe mark on cover.
2. With cover screws removed, carefully lift the metering rod and cover assembly from the float bowl.

CAUTION: *DO NOT immerse the aneroid in carburetor cleaner. The metering rod assembly, with aneroid, is extremely fragile. Use care in handling these critical parts.*

3. With metering rod and cover assembly held upright, using a small screwdriver, turn the adjusting screw counterclockwise, carefully counting the number of turns until the threaded metering rod assembly bottoms in the cover. Record number of turns counted for later reference (See Step 6.)
4. Remove "E" clip retainer from threaded end of rod. Then using small screwdriver, turn slotted rod clockwise until rod assembly disengages from cover.

(NOTE: Rod assembly is spring loaded. Use care in removing rod a assembly from cover.)

5. Install tension spring on replacement metering rod assembly and thread rod and spring assembly into cover until the rod assembly bottoms in cover.
6. Using a small screwdriver, turn the adjusting screw clockwise until the rod is backed out of the cover

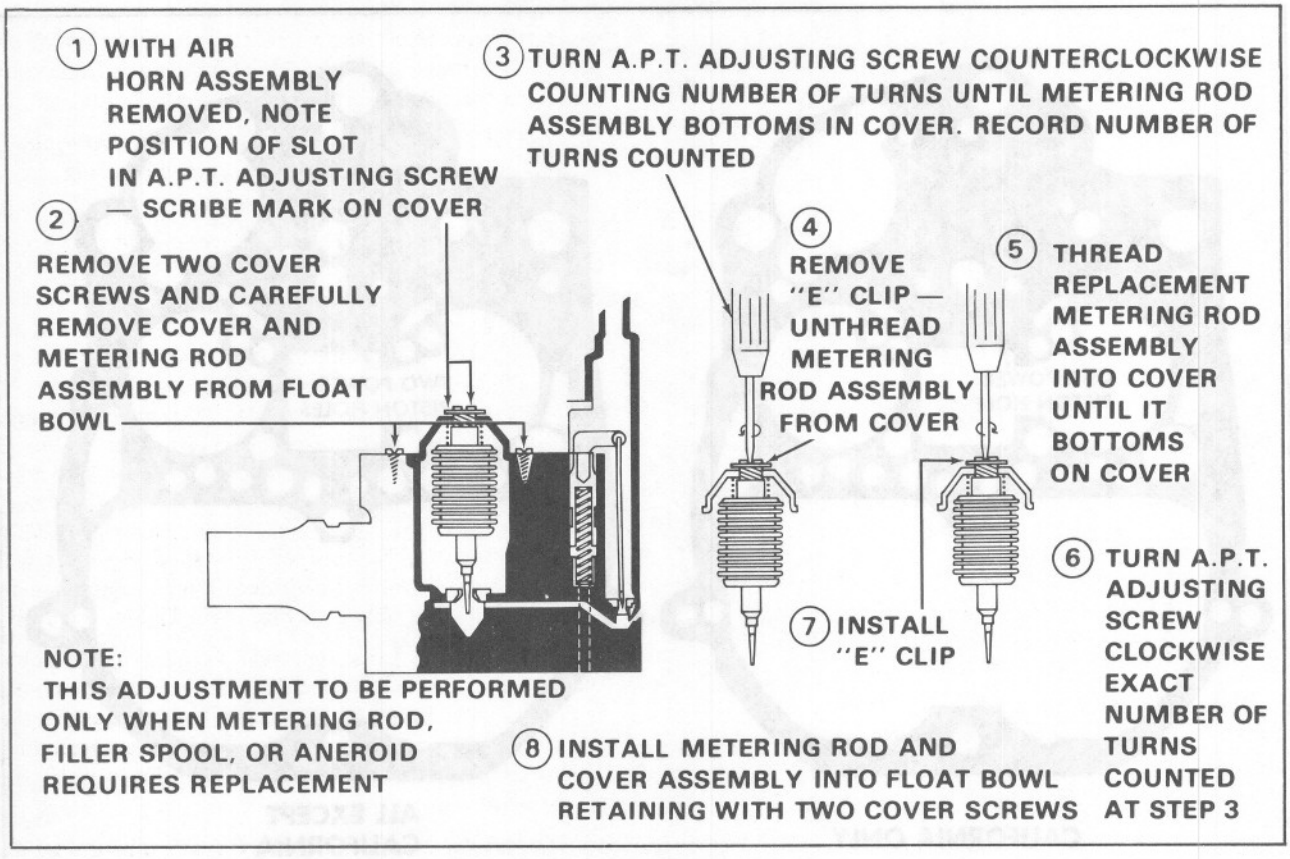


Fig. 6-42 A.P.T. Metering Rod Adjustment

exactly the same number of turns from scribe line as recorded during disassembly. (See Step #3.)

(NOTE: When properly adjusted as above, slot in replacement A.P.T. metering rod assembly may not line up with scribe mark on cover.)

7. Install "E" clip in groove in rod assembly, making sure clip is locked securely in place.

8. Carefully install cover and metering rod assembly onto float bowl aligning tab on cover assembly with slot in float bowl closest to the fuel inlet nut, Fig. 6-36.

(NOTE: Use care installing the metering rod and cover assembly into float bowl to prevent damaging or bending the metering rod tip.)

9. Install cover attaching screws and tighten securely.

21. Float Level Adjustment (Fig. 6-43)

(NOTE: To make adjustment easier, bend float arm upward at notch in arm before assembly.)

1. Hold float hinge pin firmly in place.
2. Push float down lightly against needle.
3. With adjustable T-scale, gauge from top of float bowl casting (air horn gasket removed) to top of float at toe-gauging point 1/16" back from toe. Dimension should be 15/32".
4. Bend float arm as necessary for proper adjustment.
5. Visually check float alignment after adjustment.

22. Air Horn Assembly

If removed, install choke shaft, choke valve, and two (2) attaching screws. Tighten screws securely and stake lightly in place.

(NOTE: Check choke valve for freedom of movement and proper alignment before staking screws in place.)

23. Air Horn to Bowl Installation

1. Holding down on air horn gasket at pump plunger location, carefully lower air horn assembly onto

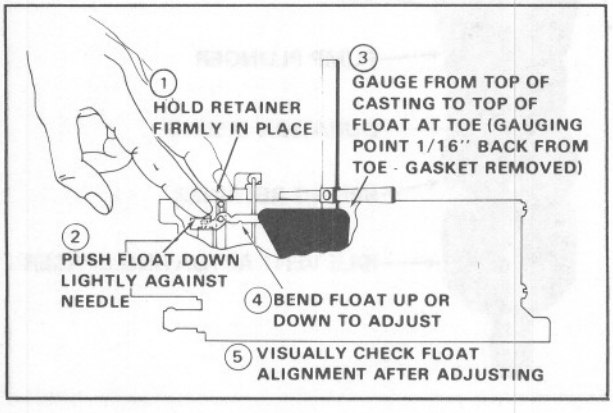


Fig. 6-43 Float Level Adjustment

POSITION*	DESCRIPTION
1	Countersunk
2	Countersunk
3	Short
4	Short
5	Short
6	Long
7	Long
8	Short
9	Short

*See 1974 Shop Manual Fig. 6-85.

Fig. 6-44 Air Horn Screws Position/Type Chart

float bowl making sure that the bleed tubes, accelerating well tubes, pull-over enrichment tubes and pump plunger stem are positioned properly through the holes in the air horn gasket, Fig. 6-32.

CAUTION: *Do not force the air horn assembly onto the bowl but rather lightly lower in place. If air horn does not seat easily, check alignment of auxiliary metering rod hanger.*

2. Install two long air horn screws, four short screws, and two countersunk screws into primary venturi area, see Fig. 6-44. Install bowl-vent valve spring, gasket and cover in air horn retaining with air horn screw. All air horn screws, except countersunk screws, use lockwashers.

(NOTE: DO NOT install bowl vent valve gasket, spring, cover, and air horn retaining screw until completion of bowl vent valve adjustment. See Note 25.)

All air horn screws must be tightened evenly and securely. See 1974 Shop Manual Fig. 6-85 for proper tightening sequence.

3. Install front vacuum break diaphragm rod into the slot in lever on the end of the air valve shaft. Then install the other end of rod into hole in the front vacuum break diaphragm plunger. Install front vacuum break control and bracket assembly to air horn using two retaining screws through the bracket. Tighten screws securely.

(NOTE: Do not attach vacuum break ("T") hose until vacuum break adjustment is completed. See Note 30.)

4. Connect upper end of pump rod to pump lever by placing rod in outer hole in lever. Using Tool J-25322, align hole in pump lever with hole in air horn casting. Using small screwdriver, push pump lever roll pin back through casting until end of pin is flush with casting bosses in air horn.

CAUTION: *Use care installing the small roll pin to prevent damage to pump lever casting bosses.*

5. Install two secondary metering rods into the secondary metering rod hanger (upper end of rods point toward each other). Install secondary metering rod holder, with rods, onto air valve cam follower. Install retaining screw and tighten securely, Fig. 6-30. Work air valves up and down several times to make sure they are free in all positions.

6. Connect choke rod into lower choke lever inside bowl cavity. The end of the rod must point outward (toward choke housing) when properly installed; then install choke rod into slot in upper choke lever and retain the choke lever to the end of the choke shaft with attaching screw. When properly installed the lever will point to the rear of the carburetor and the number on the lever will face outward. Fig. 6-30. Tighten securely.

(NOTE: The front and rear vacuum break units, fast idle cam (choke rod), and inside thermostatic choke coil lever must be adjusted properly before installing the electric choke thermostatic coil and cover assembly. Refer to Notes 30, 31, 28 and 27 respectively for adjustment information.)

7. After the vacuum break, fast idle cam and inside thermostatic coil lever are adjusted, the electric thermostatic coil and cover assembly should be installed and the cover assembly rotated counterclockwise until the choke valve closes. Rotate cover so that the scribe mark on the cover lines up with either the two notch rich pointer (Federal cars) on the choke housing or the one notch rich pointer (California cars – see page 6-47 for definition of California cars). (See Automatic Choke Coil Adjustment, Note 32.)

CAUTION: *Do not install a choke cover gasket between the electric choke assembly and the choke housing.*

Install three choke cover retainers and screws and tighten securely.

8. The vent valve spring, gasket and cover can be installed using the remaining short air horn screw after the vent valve adjustment has been made. Be certain that the spring is piloted correctly on the valve in the cover.

9. The rubber tee can be connected to the front vacuum break unit and the hose to the rear unit after the vacuum break settings have been made.

ADJUSTMENT PROCEDURES

The following adjustments must be performed in proper sequence to ensure proper carburetor function.

24. Pump Rod Adjustment (Fig. 6-45)

1. With fast idle cam follower off steps of fast idle cam, back out idle speed screw until the throttle valves are completely closed in bore.

(NOTE: Be sure secondary actuating rod is not keeping the primary throttle valves from closing. If the primary throttle valves do not completely close, bend the secondary closing tang out of position and then readjust after pump adjustment.)

2. Place pump rod in outer hole in lever.
3. Gauge from top of choke valve wall, next to vent

stack, to top of pump stem. Dimension should be 3/8 inch.

4. Bend pump lever, as shown in Fig. 6-45, to adjust (see inset).

(NOTE: Support pump lever with screwdriver while bending lever.)

25. Bowl Vent Valve Adjustment (Fig. 6-46)

(NOTE: The bowl vent valve adjustment should be checked after replacement of the vent valve actuating arm, pump plunger assembly, during carburetor overhaul and repair procedures, and after the pump rod is adjusted. The bowl vent adjustment must be made and checked with the cam follower lever off steps of fast idle cam. Press and hold fast idle cam down at all times.) Adjust the bowl vent valve as follows:

1. Remove front air horn screw and remove vent valve cover, gasket and spring.

2. Back out carburetor idle speed screw until the throttle valves are closed completely in bore.

Turn speed screw in until screw just contacts stop tang on throttle lever; then turn screw in 1-1/2 turns.

3. With speed screw set to specifications, place .075" plug gauge between the speed screw and stop tang on throttle lever.

4. At this point, the bowl vent valve should just close (seated). With speed crew set to specifications and

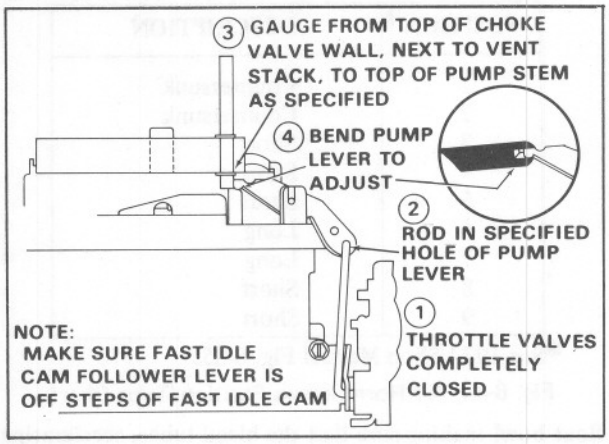


Fig. 6-45 Pump Rod Adjustment

stop tang on throttle lever against idle speed screw (plug gauge removed), the bowl vent valve should be open.

5. If necessary to adjust, using a sharp tool, pry out the plug next to the pump plunger shaft and turn the allen socket head screw on the bowl vent valve actuating arm to the above specifications.

(NOTE: After adjustment, open and close throttle valves several times, checking for proper opening and closing of valve.)

After adjustment, replace with a new plug, staking securely in place.

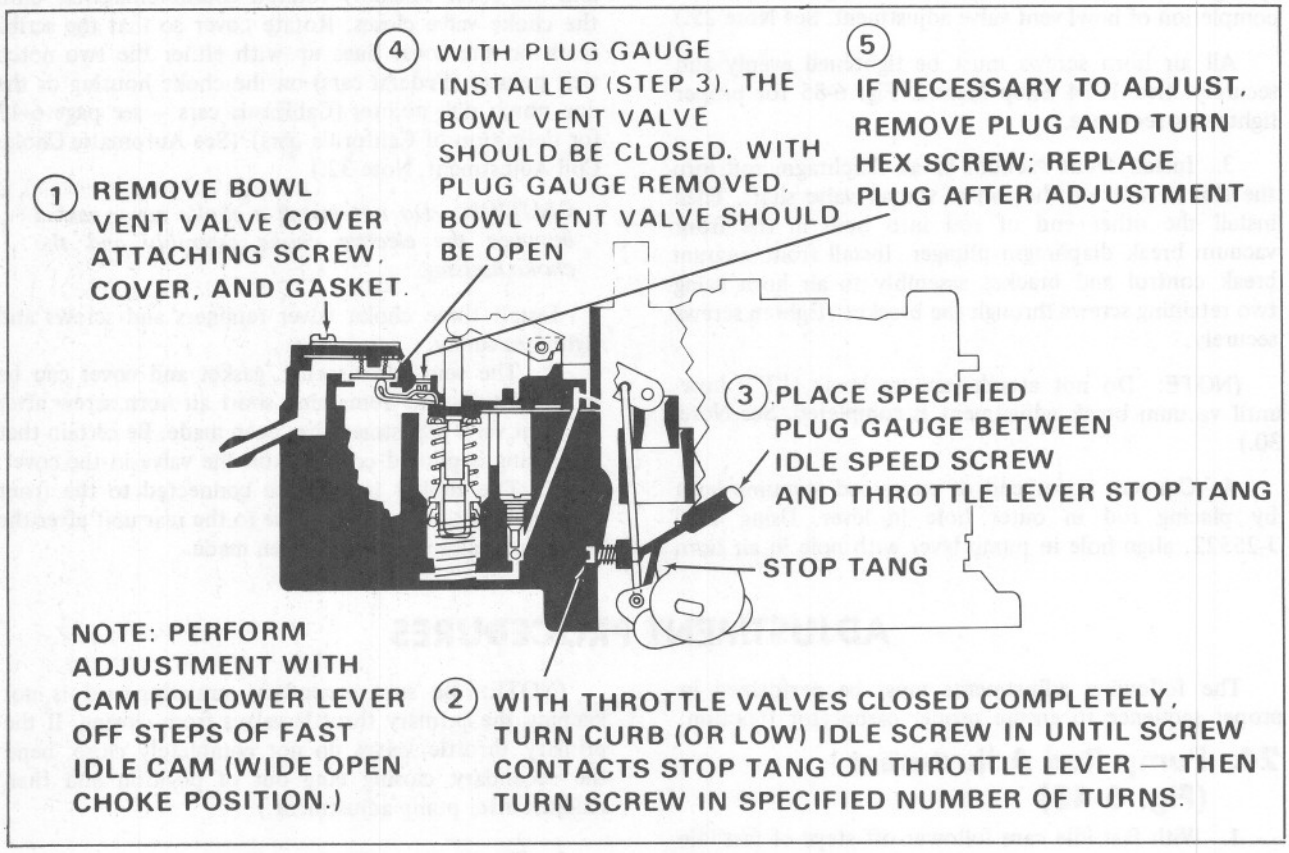


Fig. 6-46 Bowl Vent Adjustment

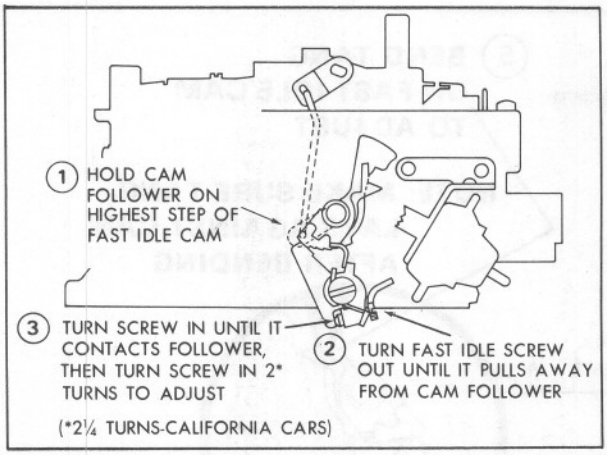


Fig. 6-47 Fast Idle Adjustment

6. Replace gasket, spring and cover over bowl vent valve. Install air horn cover retaining screw and tighten securely.

26. Fast Idle Adjustment (Fig. 6-47)

1. Place fast idle cam follower on top step of the fast idle cam and hold the follower against the cam.

2. While holding the follower against the high step of the fast idle cam, back out the fast idle screw (counterclockwise) until it pulls away from the fast idle cam follower. Turn in fast idle screw (clockwise), until the screw just contacts the fast idle cam follower.

3. Then turn the fast idle screw in an additional two turns on Federal cars, 2-1/4 turns on California cars (see page 6-47 for definition of California cars).

(NOTE: Recheck fast idle speed on the car setting to specifications listed on underhood tune-up label.)

27. Choke Coil Lever Adjustment (Fig. 6-48)

1. Loosen three retaining screws and remove electric thermostatic cover and coil assembly from choke housing.

2. Push up on thermostatic coil tang (counterclockwise) until choke valve is closed. Throttle may have to be opened partially to permit fast idle cam follower to rest on top step of fast idle cam.

3. Insert .120" plug gauge in hole in choke housing, Fig. 6-48.

4. Lower edge of choke coil lever should just contact side of plug gauge.

5. Bend choke rod at point shown to adjust (see inset), Fig. 6-48.

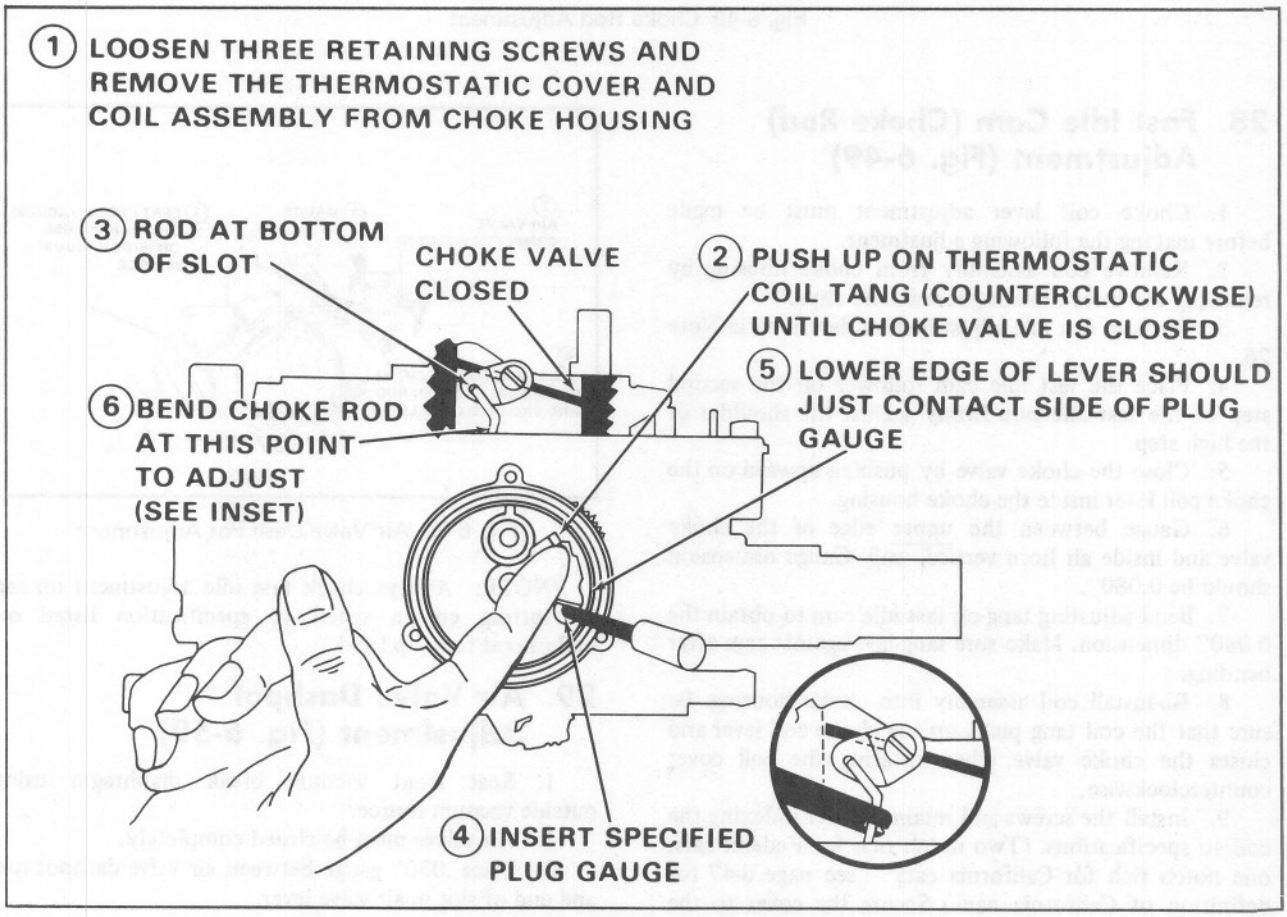


Fig. 6-48 Choke Coil Adjustment

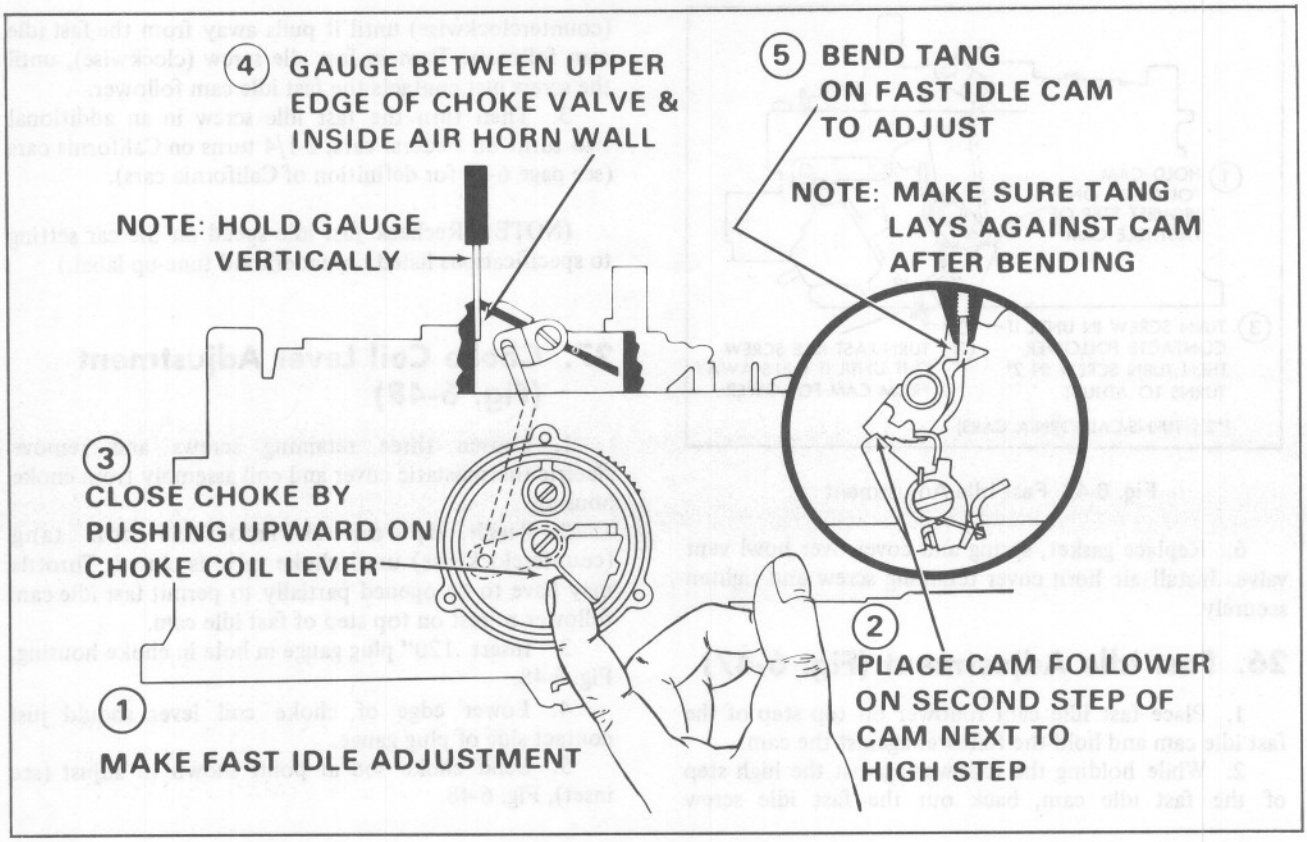


Fig. 6-49 Choke Rod Adjustment

28. Fast Idle Cam (Choke Rod) Adjustment (Fig. 6-49)

1. Choke coil lever adjustment must be made before making the following adjustment.
2. Remove coil assembly from choke housing by removing the three retaining screws and clips.
3. Perform fast idle adjustment as described in Note 26.
4. Place the fast idle cam follower on the second step of the fast idle cam firmly against the shoulder of the high step.
5. Close the choke valve by pushing upward on the choke coil lever inside the choke housing.
6. Gauge between the upper edge of the choke valve and inside air horn vertical wall. Gauge dimension should be 0.080".
7. Bend adjusting tang on fast idle cam to obtain the 0.080" dimension. Make sure tang lays against cam after bending.
8. Re-install coil assembly into choke housing. Be sure that the coil tang picks up the choke coil lever and closes the choke valve when rotating the coil cover counterclockwise.
9. Install the screws and retainers after indexing the coil to specifications. (Two notch rich for Federal cars, one notch rich for California cars – see page 6-47 for definition of California cars.) Secure the cover to the housing at the proper index by tightening the three screws.

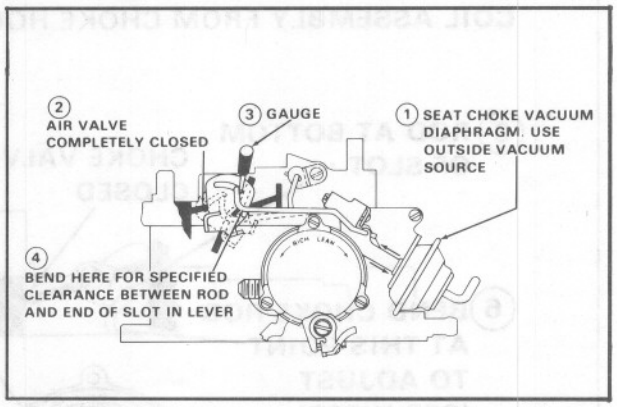


Fig. 6-50 Air Valve Dash Pot Adjustment

(NOTE: Always check fast idle adjustment on car by setting engine speed to specification listed on underhood tune-up label.)

29. Air Valve Dashpot Adjustment (Fig. 6-50)

1. Seat front vacuum break diaphragm using outside vacuum source.
2. Air valves must be closed completely.
3. Place .030" gauge between air valve dashpot rod and end of slot in air valve lever.
4. Bend air valve dashpot rod at point shown if necessary to adjust.

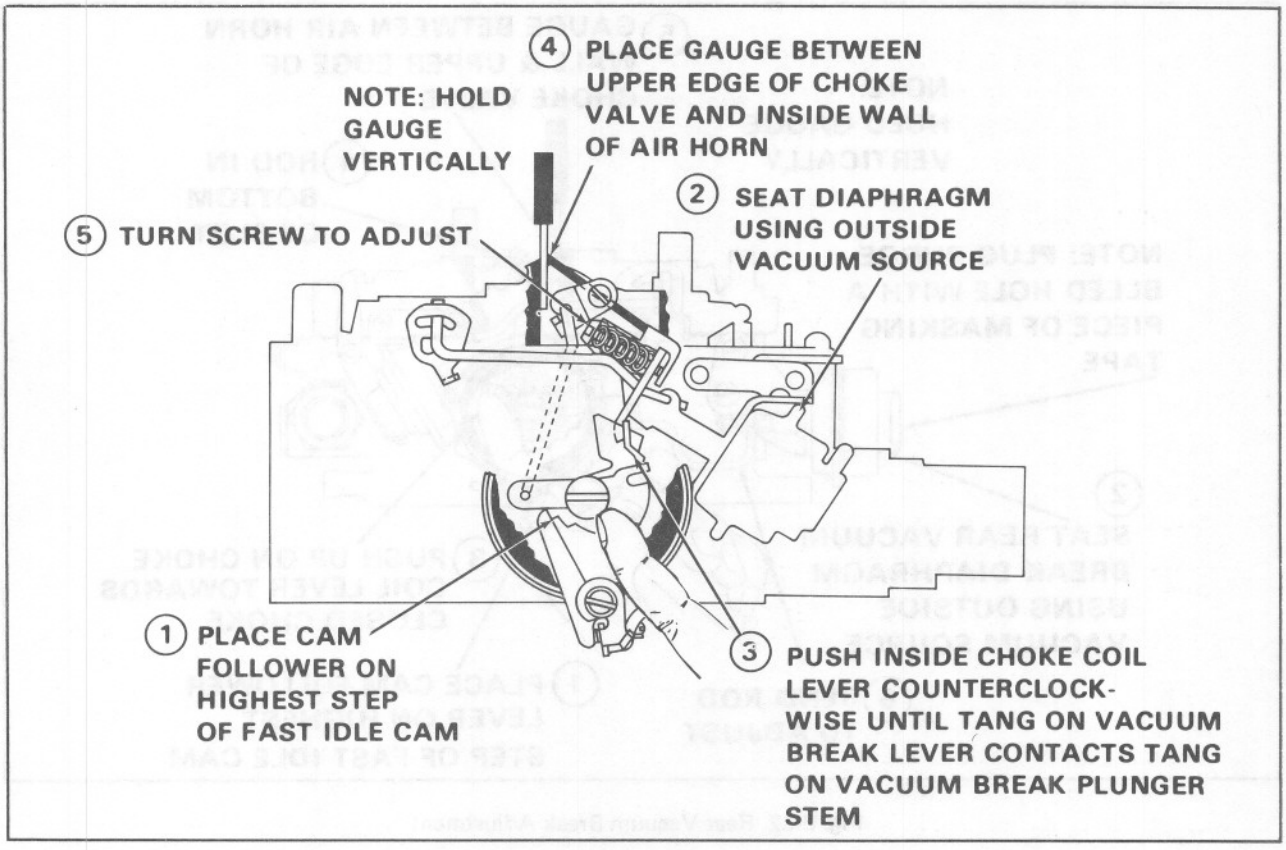


Fig. 6-51 Front Vacuum Break Adjustment

30. Front Vacuum Break Adjustment (Fig. 6-51)

1. Loosen three retaining screws and remove electric thermostatic cover and coil assembly from choke housing.
2. Place cam follower lever on highest step of fast idle cam.
3. Seat the front vacuum diaphragm using an outside vacuum source.
4. Push up on inside choke coil lever until tang on vacuum break lever contacts tang on vacuum break plunger.
5. Place gauge between upper edge of choke valve and inside air horn wall. Dimension should be .160" (.230" on California carburetors – see page 6-47 for definition of California carburetors.)
6. To obtain correct specification, turn the adjustment screw on the vacuum break plunger lever.
7. After adjustment, install vacuum hose to vacuum break unit.

31. Rear Vacuum Break Adjustment (Fig. 6-52)

1. Loosen three retaining screws and remove electric thermostatic cover and coil assembly from choke housing.
2. Place cam follower lever on highest step of fast idle cam.
3. Plug the bleed hole and the entire end cover of the vacuum break unit using a piece of tape approximately one inch square.
4. Seat the rear vacuum diaphragm using an outside vacuum source.

(NOTE: With the delay feature, it will take a few seconds for the diaphragm to seat.)

5. Push up on choke coil lever inside choke housing toward closed choke until stem is pulled out and seated-(spring compressed.)
6. With choke rod in bottom of slot in choke lever, gauge between upper edge of choke valve and air horn wall. Dimension should be .130" (.230" on California carburetors – see page 6-47 for definition of California carburetors.)
7. Bend vacuum break rod at point shown if necessary to adjust.
8. After adjustment, remove tape from end cover of vacuum break unit. Install carburetor vacuum hose to vacuum break unit.

32. Automatic Choke Coil Adjustment (Fig. 6-53)

1. Install the electric choke assembly in choke housing.
2. Place fast idle cam follower on high step of cam.
3. Align index point on cover as follows:

Federal Cars – 2 notches rich (2 marks left of index mark on housing).

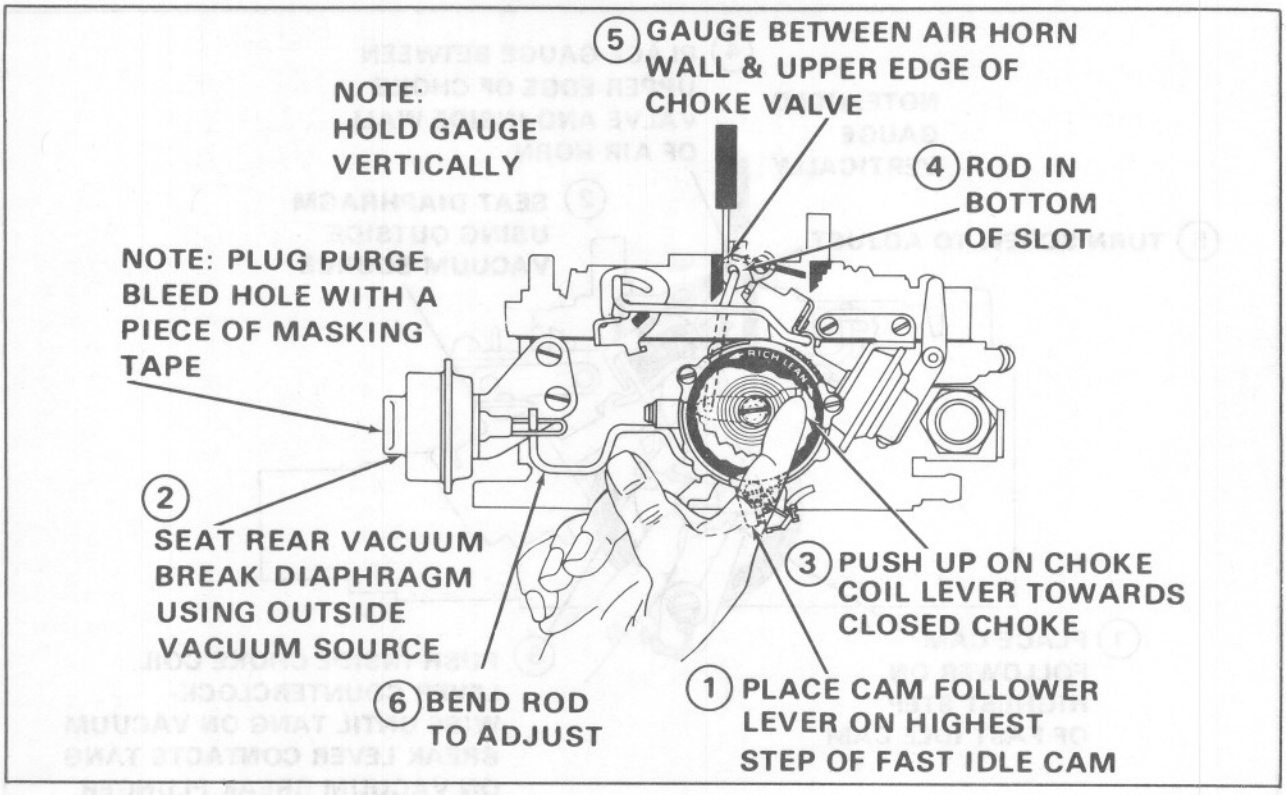


Fig. 6-52 Rear Vacuum Break Adjustment

California Cars – 1 notch rich (one mark left of index mark on housing). See page 6-47 for definition of California cars.

4. Install cover retainers and screws and tighten securely.

(NOTE: Ground contact for the electric choke is provided by a metal plate located at the rear of the choke assembly. DO NOT INSTALL A CHOKE COVER GASKET BETWEEN THE ELECTRIC CHOKE ASSEMBLY AND THE CHOKE HOUSING.)

CAUTION: *Do not immerse the electric choke assembly in any cleaning solution or severe damage can result.*

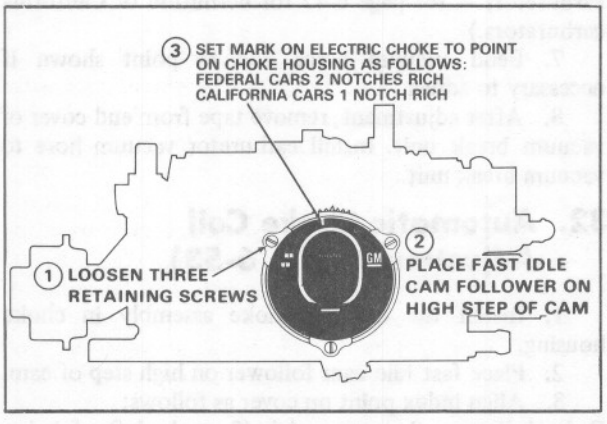


Fig. 6-53 Choke Index Adjustment

33. Unloader Adjustment (Fig. 6-54)

1. Install electric choke thermostatic coil and cover assembly in choke housing and align index mark on cover as described in Note 32.

2. With choke valve completely closed, hold throttle valves wide open.

(NOTE: On warm engine, close choke valve by pushing up on tang of intermediate choke lever that contacts fast idle cam. A rubber band may be used for this purpose.)

3. Gauge between upper edge of choke valve and air horn wall. Dimension should be .215".

4. Bend tang on fast idle lever as shown to adjust.

CAUTION: Check to be sure unloader tang on fast idle lever is contacting center point of fast idle cam unloader tang after adjustment.

34. Secondary Lock-out Lever Clearance (Fig. 6-55)

1. Hold choke valve and secondary throttle valves closed.

2. Using .015" plug gauge, measure clearance between lock-out pin and lock-out lever as shown.

3. If necessary, bend lock-out pin at point shown to obtain specified clearance.

35. Secondary Throttle Valve Lock-out Opening Adjustment (Fig. 6-55)

1. Hold choke valve wide open by pushing down on tail of fast idle cam and holding it down.

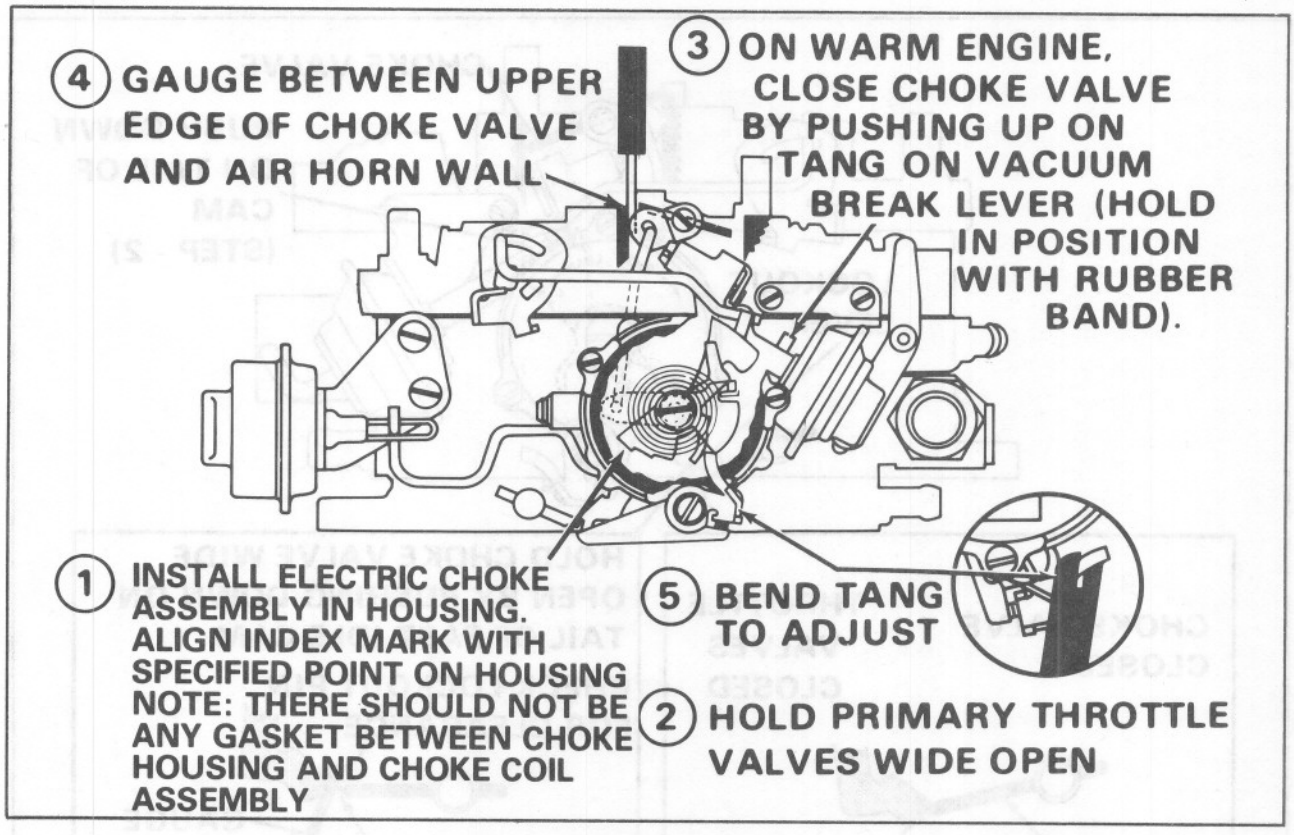


Fig. 6-54 Unloader Adjustment

2. Push the lockout lever counterclockwise so that upper end of lever is in contact with round pin in fast idle cam.

3. Hold secondary throttle valves slightly open.

4. Using .015" plug gauge, measure clearance between end of lock-out pin and toe of lock-out lever as shown.

5. If necessary, file off end of lock-out pin to obtain specified clearance.

36. Secondary Closing Adjustment (Fig. 6-56)

1. With choke valve wide open, fast idle cam down, and fast idle cam follower off the fast idle cam, seat the primary throttle valves in the bores by backing off the idle adjusting screw.

2. Turn in the idle adjusting screw until it makes contact with the idle stop tab on the primary throttle lever.

3. Turn screw in (clockwise) one more turn.

4. There should be a 0.020" clearance between actuating rod and front of slot in secondary throttle lever Fig. 6-56 when primary throttle middle lever is against secondary closing tang on primary throttle outer lever.

5. Bend secondary closing tang on primary lever as shown to adjust.

(NOTE: After adjustment, readjust curb idle speed on car using idle speed screw. See underhood tune-up label for procedures and specifications.)

37. Secondary Opening Adjustment (Fig. 6-57)

1. Lightly open primary throttle lever until link just contacts tang on secondary lever.

2. With link against tang, the link should be in center of slot in the secondary lever.

3. Bend tang on secondary lever, as shown, if necessary to adjust.

38. Air Valve Spring Wind-Up Adjustment (Fig. 6-58)

1. Remove front vacuum break diaphragm unit and air valve dashpot rod (see Note 18b. for disassembly procedures).

2. Loosen lock screw using hex wrench.

3. Turn tension adjusting screw counterclockwise until air valve opens part way.

4. Turn tension adjusting screw counterclockwise while tapping lightly on casting with handle of a screwdriver.

5. When air valve just closes, turn tension adjusting screw clockwise an additional 7/16 turn (1/2 turn on California carburetors – see page 6-47 for definition of California carburetors).

6. Tighten lockscrew and replace air valve dashpot rod and front vacuum break diaphragm unit and bracket.

(NOTE: Be sure pin in contact with spring is greased so spring can slide freely.)

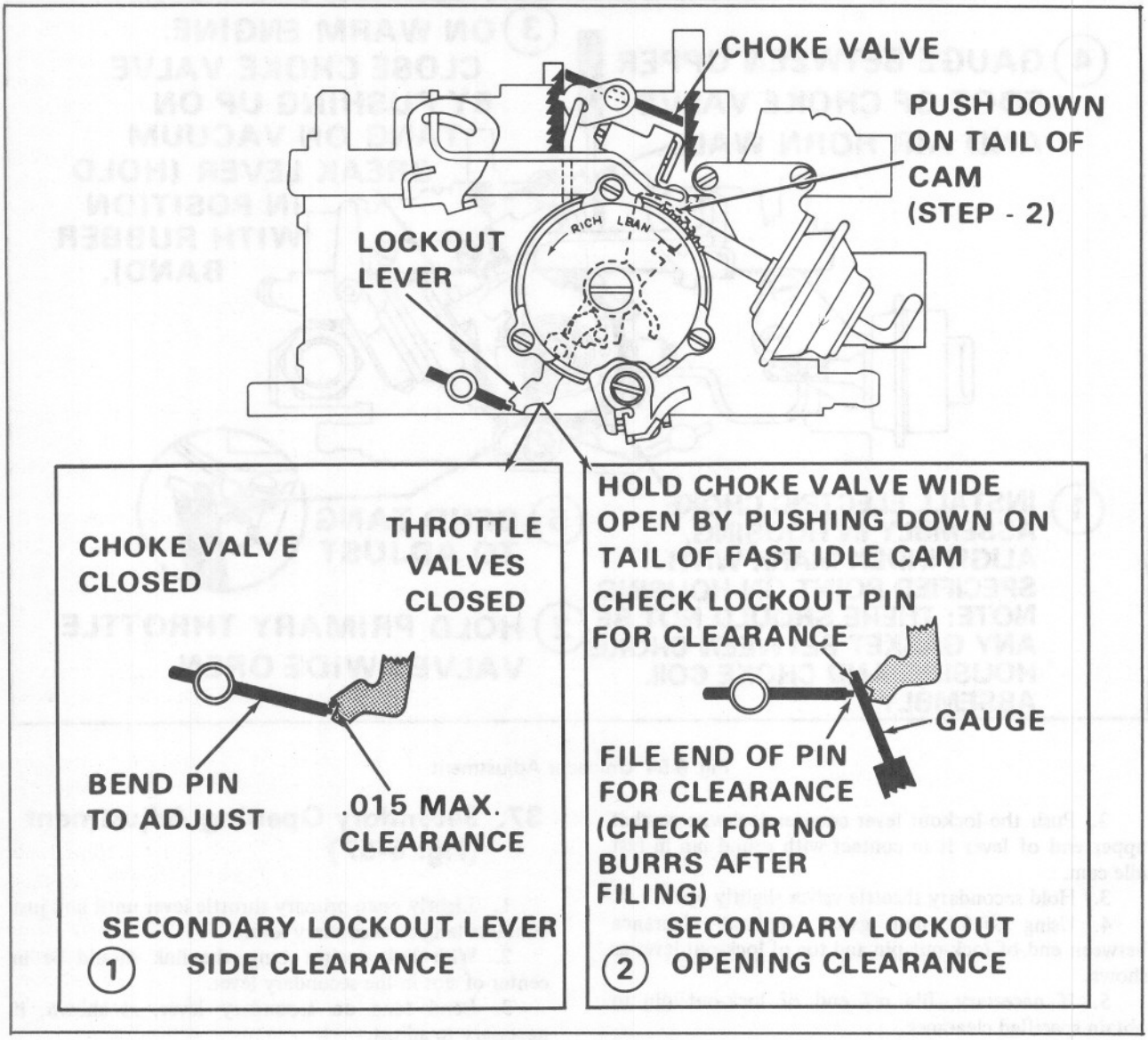


Fig. 6-55 Secondary Lockout Adjustments

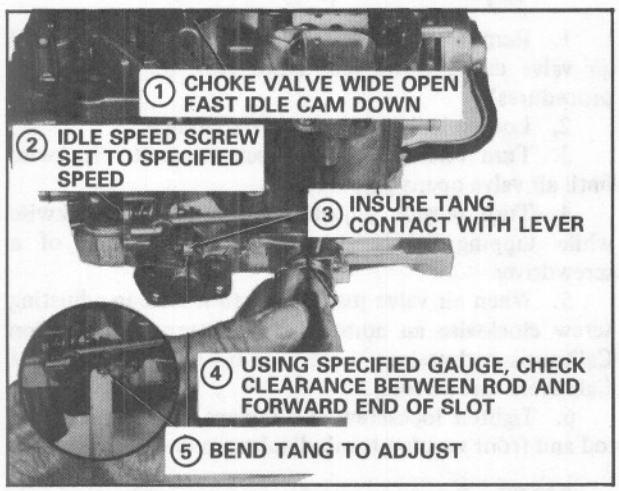


Fig. 6-56 Secondary Closing Adjustment

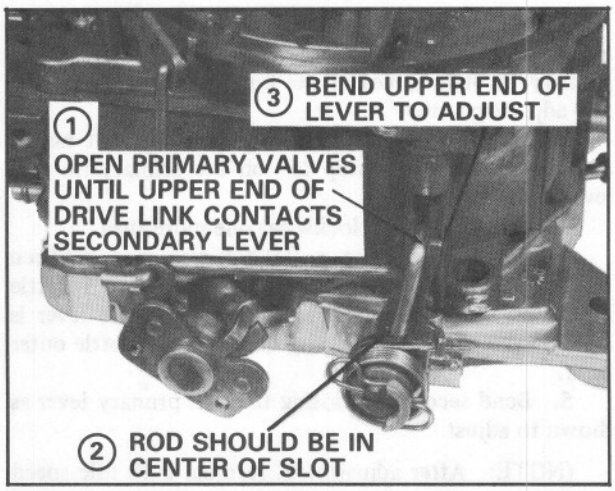


Fig. 6-57 Secondary Opening Adjustment

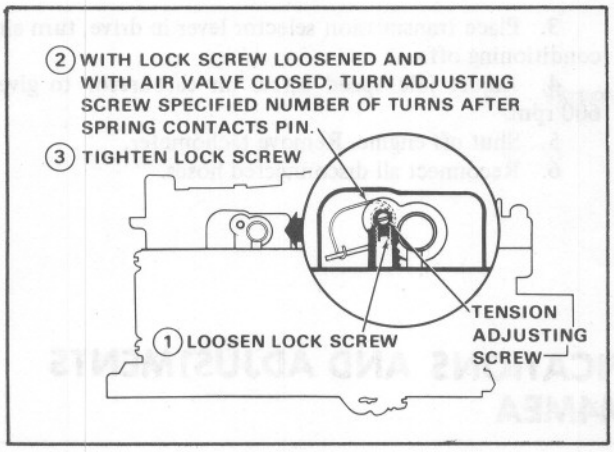


Fig. 6-58 Air Valve Wind-Up Adjustment

39. Electric Choke Diagnosis and Checking Procedure

In order to have good engine performance during warm up and be able to pass Federal or California exhaust emission standards, the electric choke must function properly.

Possible reasons for the choke not operating properly are listed below.

1. No engine oil pressure.
2. Malfunctioning oil pressure switch.
3. No current to oil pressure switch due to:
   a. Burned out 25 amp "backup-Trans" fuse.
   b. Broken wire to switch (18 orange, 18 orange/black or 18 dark green).
4. No current between choke coil and oil pressure switch due to:
   a. Broken 18 tan lead wire.
   b. Wire terminal not locked on coil terminal.
   c. Ground circuit incomplete between grounding plate of choke assembly and housing.
5. Failed choke coil assembly.

A voltmeter or continuity light may be used to check the circuits for continuity to the oil pressure switch and the choke coil.

If it is suspected that the choke coil assembly has failed, the following check may be made.

1. Remove coil from carburetor and cool to room temperature (above 60°F.)
2. Attach a jumper wire between positive battery terminal and terminal of coil assembly. Attach a second jumper wire between negative battery terminal and grounding plate of choke coil assembly.
3. The tang of the coil should rotate 45° in 54 to 90 seconds.
4. If coil fails to rotate or exceeds the above timing specification, replace coil assembly.
5. If coil is within above timing specification then coil is good and problem is elsewhere.
6. Reinstall coil and set to proper index as described in Note 32.

If coil is cooled off sufficiently the choke valve will close when throttle is opened slightly. Attach a jumper wire between the positive battery terminal and choke coil terminal. Choke coil should warm up and the choke blade can be observed opening, indicating a good and properly grounded choke coil assembly. At room temperature the choke blade should be wide open in approximately 90 seconds.

If the choke does not operate properly after the coil has been proven satisfactory, check out the other possibilities that prevent current from getting to the choke coil.

40. Idle Mixture & Speed Adjustments (On-Car)

a. Mixture Adjustment

The following procedure should not be considered part of a normal tune up. This procedure only applies in event of a major overhaul of the carburetor or when the throttle body has been replaced.

The idle mixture screws are locked in place with limiter caps which must be removed before a mixture adjustment can be made. When removing the limiter caps be careful not to damage or bend the mixture screws.

The idle mixture adjustment is made as follows:

1. Disconnect parking brake vacuum hose at vacuum release cylinder and plug hose. Disconnect air leveling compressor hose at air cleaner and plug hose. Remove air cleaner but keep vacuum hoses connected.

(NOTE: Hoses must be disconnected at these locations to include any calibrated leakage in balance of system).

2. Connect tachometer to engine, set parking brake securely and block wheels. Place transmission selector lever in Neutral.
3. Mixture screws should be out 5 turns from seated position. Start and warm engine to normal operating temperature. Be sure that choke is full open and that throttle lever stop tang is contacting the carburetor idle speed screw (slow idle position).
4. Place transmission selector lever in either "DR" position and turn A/C. off.
5. Set idle speed to 650 rpm on Federal cars and 620 rpm on California cars by adjusting the idle speed screw located at the throttle lever side of the carubretor.
6. Using Extension Hex-Head Driver, J-22646 turn alternately each mixture screw inward 1/4 turn at a time until the 600 rpm speed is reached.
7. Idle mixture and speed adjustment is now complete. Idle speed should be 600 rpm.
8. Shut off engine and remove tachometer.
9. Connect parking brake vacuum line.
10. Connect distributor and ALC vacuum lines.
11. Install air cleaner.

b. Idle Speed Adjustment

Normal engine idle speed is adjusted with the idle speed screw located at the throttle lever side of carburetor.

If the carburetor has been overhauled, the idle mixture adjustment must be correct before the idle speed adjustment can be made. Basic engine timing at idle should be set to 6° BTDC.

Speed adjustment is made as follows:

1. Disconnect parking brake hose at vacuum release cylinder and plug hose. Set parking brake and block wheels. Disconnect air leveling compressor hose at air cleaner and plug hose.
2. Connect tachometer, start and warm-up engine to operating temperature in park. Choke should be fully open and cam follower lever completely off steps of fast idle cam.
3. Place transmission selector lever in drive, turn air conditioning off.
4. Adjust idle speed screw on carburetor to give 600 rpm.
5. Shut off engine. Remove tachometer.
6. Reconnect all disconnected hoses.

QUADRAJET CARBURETOR SPECIFICATIONS AND ADJUSTMENTS MODEL M4MEA

Throttle Bore Diameter	
Primary	1.375"
Secondary	2.250"
Main Venturi Diameter	
Primary	1.218"
Secondary	.625"
Teritiary	.281"

ADJUSTMENT SPECIFICATIONS

	Federal Vehicles*	California Vehicles**
Air Valve		
Dashpot	.030"	.030"
Wind-Up	7/16 Turn	1/2 Turn
Choke Coil Lever	.120"	.120"
Choke Rod Cam	.080"	.080"
Choke Setting	2 Notches Rich	1 Notch Rich
Curb Idle-RPM (In Drive, A/C Off)	600	600
Fast Idle-RPM (A/C Off)	1200-1250	1200-1250
Float Level	15/32"	15/32"
Idle Vent	.075"	.075"
Pump Rod		
Adjustment	3/8"	3/8"
Location	Outer Hole	Outer Hole
Secondary Closing	.020"	.020"
Secondary Lockout		
Lever Clearance	.015"	.015"
Opening	.015"	.015"
Unloader	.215"	.215"
Vacuum Break		
Front	.160"	.230"
Rear	.130"	.230"

*All Vehicles not equipped for sale in the State of California are called Federal Vehicles.

**California Vehicles are defined as all vehicles sold in the State of California AND ALL commercial chassis' equipped with the optional 145 amp generator.

1975 CARBURETOR APPLICATION CHART

CARBURETOR NUMBER	APPLICATION	SERIES
7045230 or Equivalent	Federal* Vehicles	All Series
7045530 or Equivalent	California** Vehicles	All Series

*All vehicles not equipped for sale in the State of California, are called "Federal Vehicles."

**California vehicles are defined as all vehicles sold in the State of California AND ALL commercial chassis' equipped with the optional 145 amp generator.

FUEL PUMP SPECIFICATIONS

NOTE: Testing to be done with entire car at room temperature.

Fuel pressure at idle speed ..... 5-1/4 to 6-1/2 psi
Fuel pump discharge per stroke at cranking speed ..... 28 cc. Minimum
Fuel pump discharge in 17 strokes at cranking speed ..... 1 pint Minimum

TORQUE SPECIFICATIONS

Material Number	Application	Thread Size	Torque
260-M	Carburetor to Intake Manifold Screw (Rear)	5/16-18	15 ft. lbs.
260-M	Carburetor to Intake Manifold Screw (Front)	5/16-18	11 ft. lbs.
280-M	Fuel Pump to Cylinder Block Screw	5/16-18	13 ft. lbs.

NOTE: Refer to back of manual, Page 16-1, for bolt and nut markings and steel classifications.

GENERAL DESCRIPTION

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

41. 1975 Emission Control Changes

The following changes have been made to the various emission control systems to comply with Federal and California standards in effect during the 1975 model year.

a. The A.I.R. system of controlling hydrocarbons and carbon monoxide is used on all vehicles built for sale in the State of California and on the Commercial Chassis (6ZZ) when equipped with the 145 amp. generator.

b. The back-pressure transducer controlled EGR system is used on vehicles equipped with the A.I.R. system. All other vehicles continue to use the EGR System without the back-pressure transducer.

c. All domestic vehicles are equipped with a Catalytic Converter system. Since the Catalytic Converter is an integral part of the exhaust system, information on its operation and servicing will be found in Section 8 of this supplement.

d. A new device, the Early Fuel Evaporation Valve (E.F.E.), is installed on all engines. This valve is also an integral part of the exhaust system and its operation is explained in Section 8 of this supplement.

e. The ECS vapor canister includes a third nipple to accomodate the mechanical bowl vent feature found on 1975 carburetors.

42. Cadillac Emission Controls

The following illustrations are provided to show the correct installation of components in the various 1975 Cadillac Emission Control Systems.

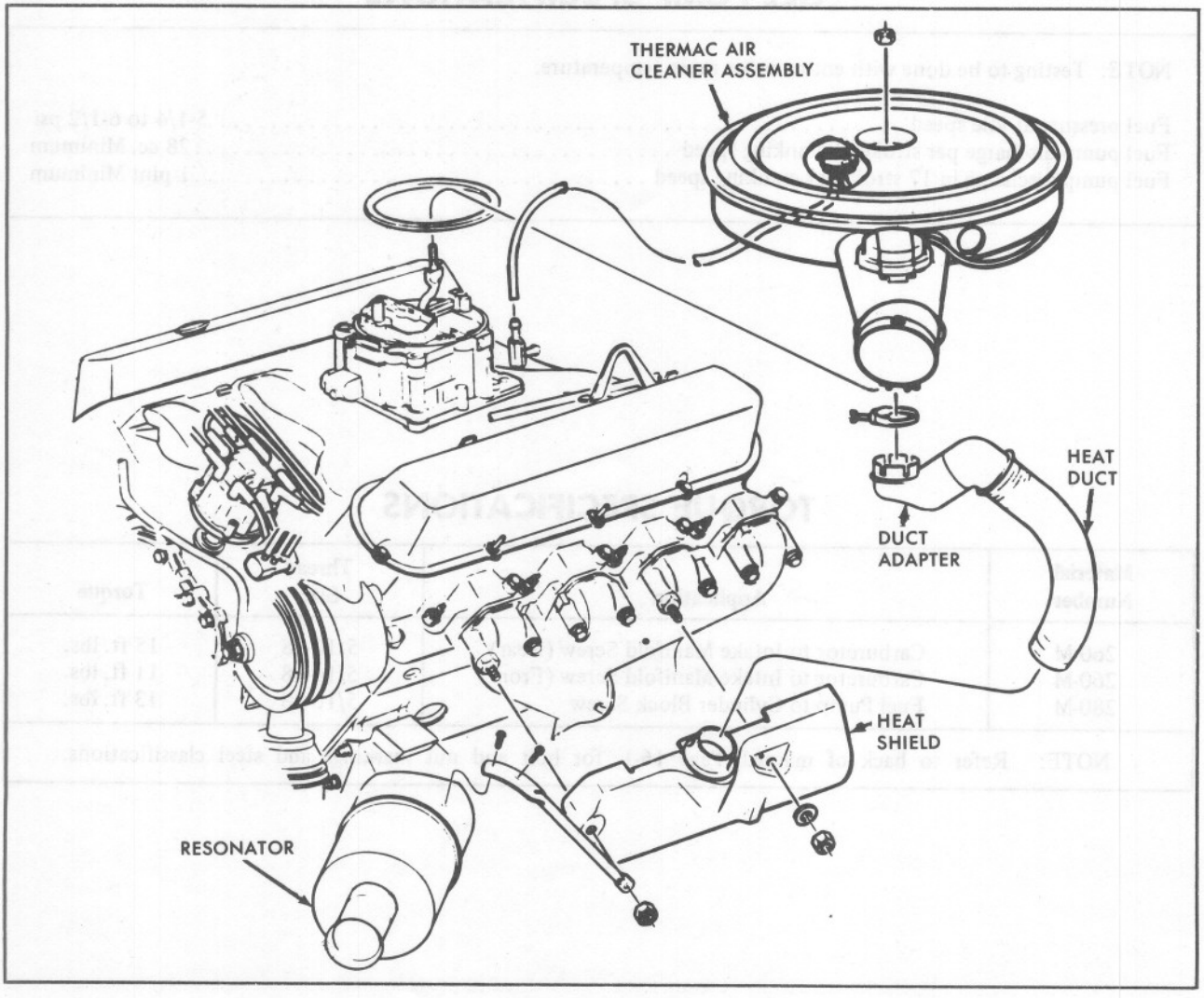


Fig. 6-59 Thermac Air Cleaner

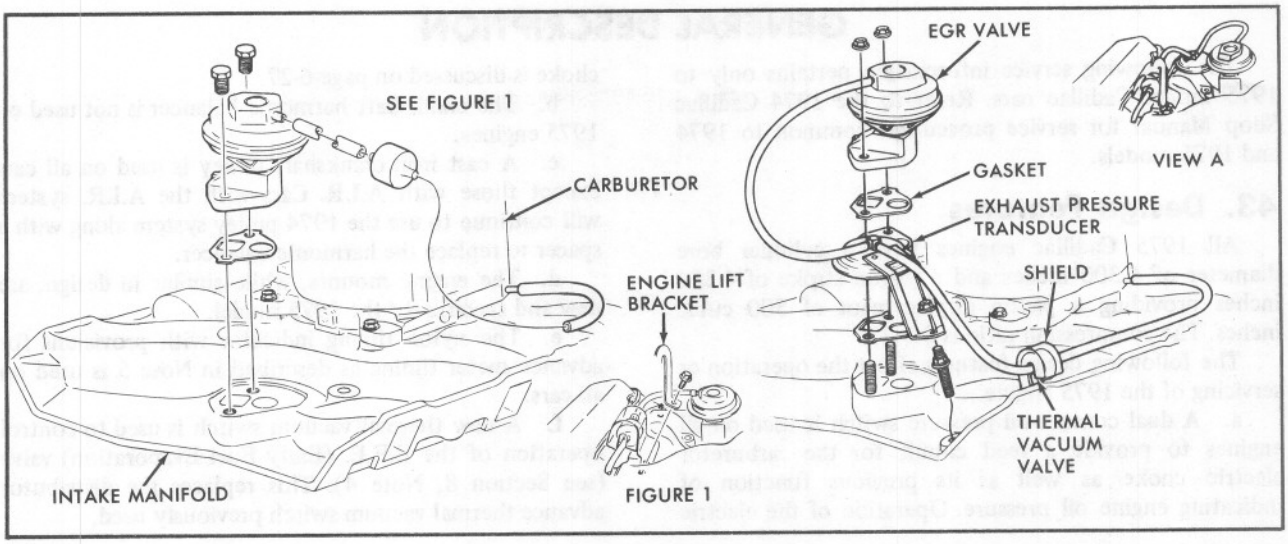


Fig. 6-60 E.G.R. Systems

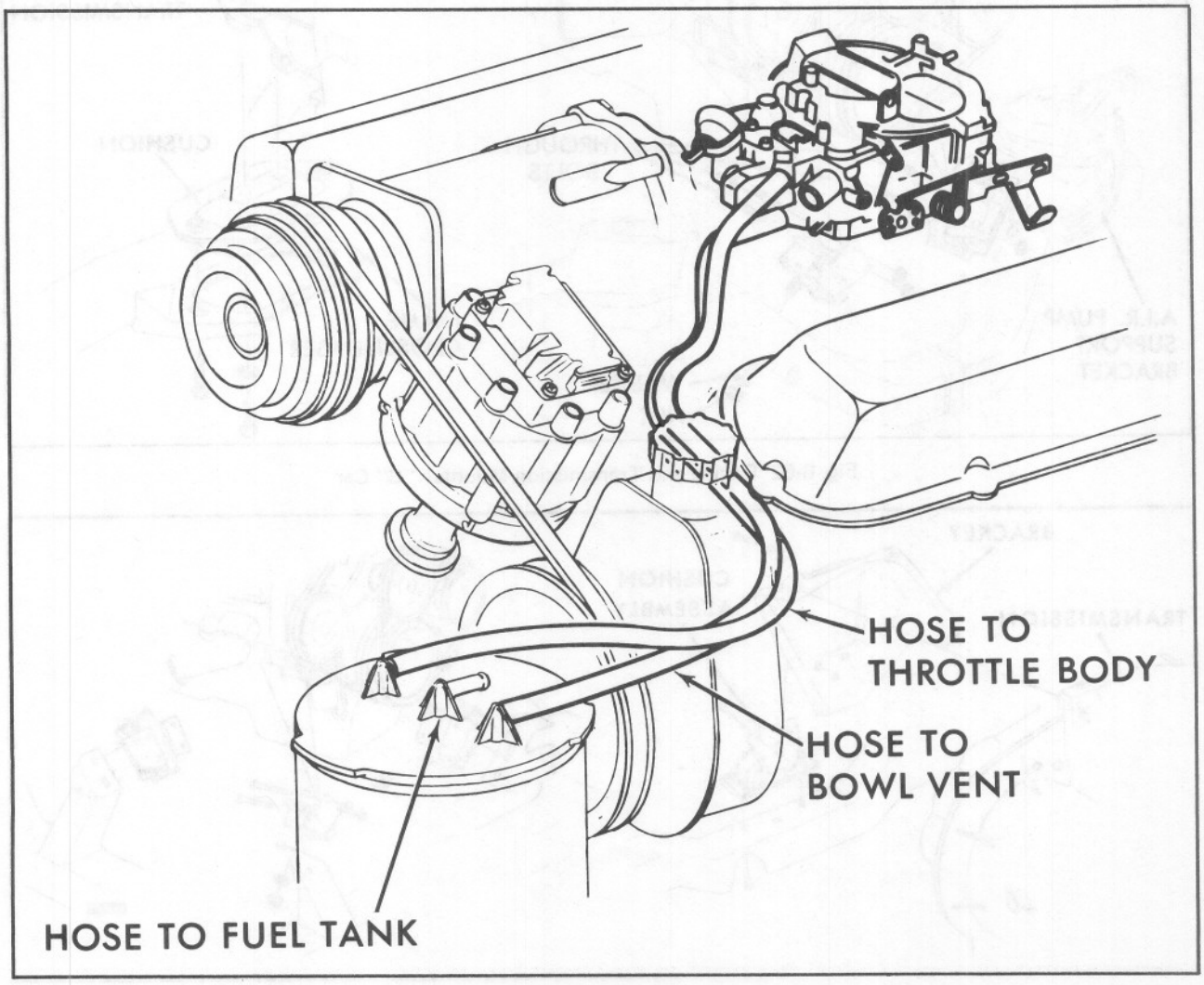


Fig. 6-61 Evaporative Canister Hoses

GENERAL DESCRIPTION

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

43. Design Features

All 1975 Cadillac engines have a cylinder bore diameter of 4.300 inches and a piston stroke of 4.304 inches providing a piston displacement of 500 cubic inches. The compression ratio is 8.5:1.

The following design features affect the operation or servicing of the 1975 engine.

a. A dual contact oil pressure switch is used on all engines to provide a feed circuit for the carburetor electric choke as well as its previous function of indicating engine oil pressure. Operation of the electric choke is discussed on page 6-27.

b. The crankshaft harmonic balancer is not used on 1975 engines.

c. A cast iron crankshaft pulley is used on all cars except those with A.I.R. Cars with the A.I.R. system will continue to use the 1974 pulley system along with a spacer to replace the harmonic balancer.

d. The engine mounts, while similar in design, are new and specific for the 1975 model.

e. The nylon timing indicator with provisions for advance meter timing as described in Note 5 is used on all cars.

f. A new thermal vacuum switch is used to control operation of the E.F.E. (Early Fuel Evaporation) valve (see Section 8, Note 4). This replaces the distributor advance thermal vacuum switch previously used.

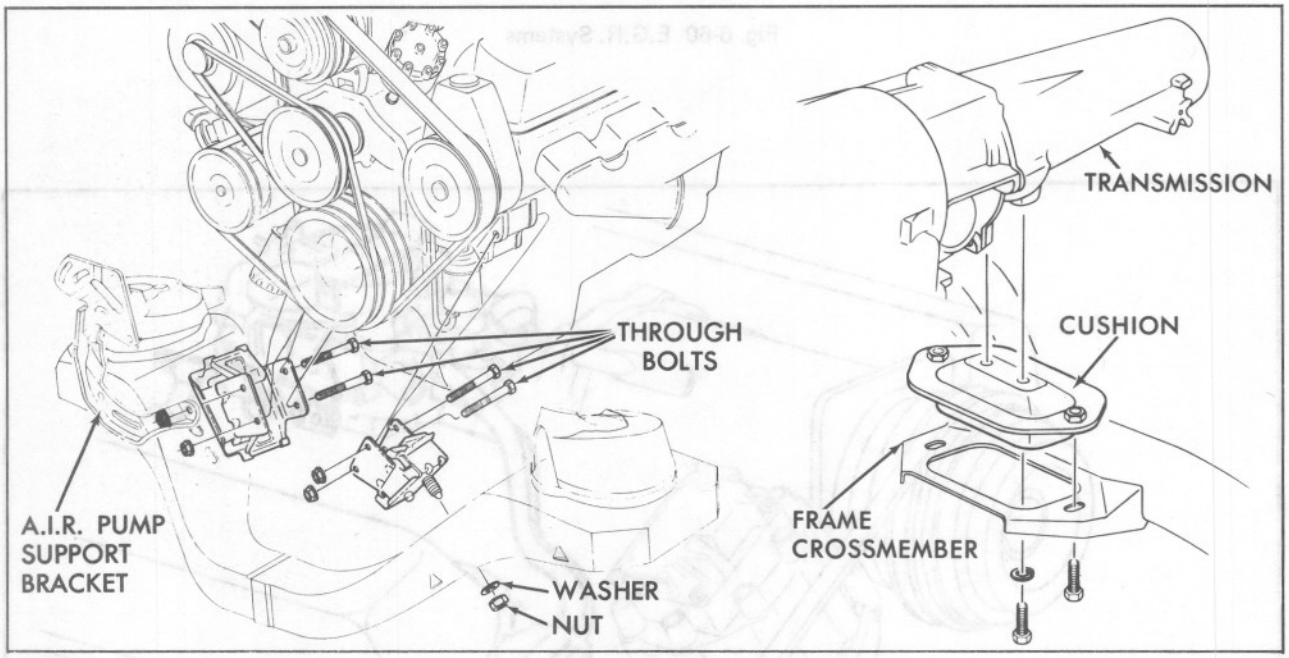


Fig. 6-62 Engine and Transmission Mounts - "C" Car

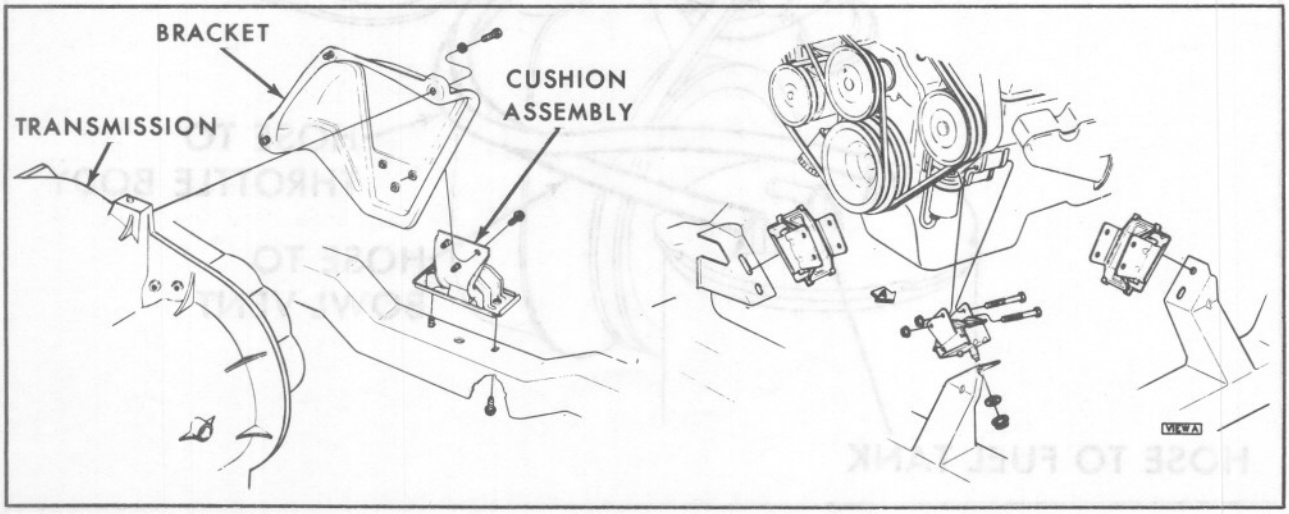


Fig. 6-63 Engine and Transmission Mounts – Eldorado

SERVICE INFORMATION

44. Engine and Transmission Mounts

Three engine support mounts are used; two in the front located on each side of the engine block, and one at the rear of the transmission, Fig. 6-62 and Fig. 6-63. The front mounts are of a completely encapsulated design in that the rubber cushions in the mounts are always under compression.

On all cars except the Eldorado, the front mounts are seated on the main front cross member of the frame and secured by a nut and washer, Fig. 6-62. On the Eldorado, special mounting brackets welded to the frame provide the front attaching points and a special frame cross member is used to provide the seat for the rear mount, Fig. 6-63

45. Engine Front Cover

Engine operations requiring removal of the front cover (such as camshaft replacement) may use the following procedure which eliminates the necessity of removing the oil pan. Close adherance to the procedure is required to avoid oil leaks.

a. Removal

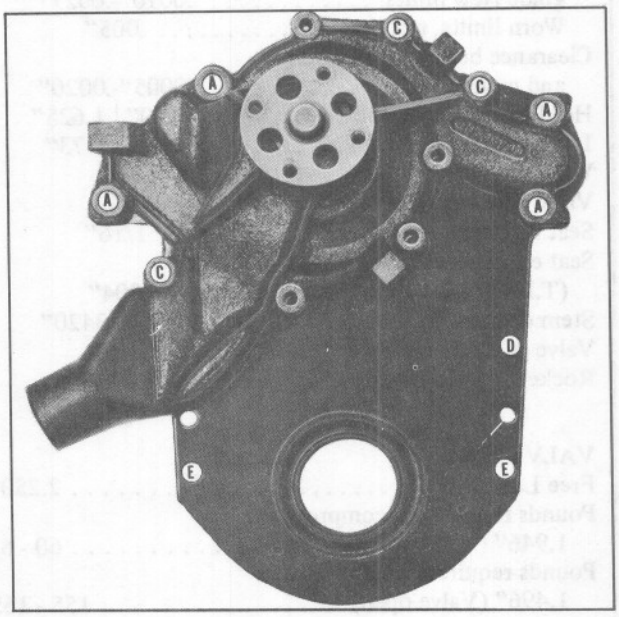
1. Remove crankshaft pulley hub as described in Note 115a of the 1974 Shop Manual.
2. Loosen starter sufficiently to gain access to oil pan screws.
3. Loosen oil pan nuts and screws and lower front of oil pan.
4. Loosen hose clamp at water pump inlet and remove lower radiator hose from water pump.
5. Remove 10 screws that hold front cover to cylinder block and remove cover with water pump attached. Discard gasket.

b. Installation

1. Inspect oil pan front seal to make sure that it was not damaged during removal of cover. If damaged, seal should be replaced. If seal is in satisfactory condition remove any oil from seal and coat sealing surface with gasket cement.
2. Position new front cover gasket over locating dowels on cylinder block.

(NOTE: Apply a small amount of gasket cement to hold gasket in place).

3. Work front cover over end of crankshaft and down into position over oil pan lip. Align dowel holes in cover with locating dowels on cylinder block. Secure with attaching screws. Refer to Fig. 6-64 for proper screw location and torque specifications.
4. Install crankshaft pulley hub as described in Note 115b of the 1974 Shop Manual.
5. Tighten oil pan nuts and screws to 10 ft. lbs. and tighten starter motor mounting screws to 45 ft. lbs.
6. Install lower radiator hose to water pump inlet and secure with hose clamp.
7. Refill cooling system and add engine oil.
8. Run engine and check for leaks.



Key	(No.)	Size	Torque
A	(4)	3/8-16 x 1-3/8	22 Foot-Pounds
C	(3)	5/16-18 x 1-1/4	10 Foot-Pounds
D	(1)	5/16-18 x 5/8	10 Foot-Pounds
E	(2)	3/8-16 x 5/8	22 Foot-Pounds

Fig. 6-64 Front Cover Attaching Screws

SPECIFICATIONS

Items	All Series Unless Otherwise Noted
Bore	4.300"
Stroke	4.304"
Piston Displacement	500 cu. in.
Compression Ratio	8.50 to 1
Compression Pressure	
At cranking speed (throttle open)	145-165 psi
Points of Suspension	3
VALVES	**Intake / Exhaust**
Clearance between stem and guide New limits	.0010"-.0027"
Worn limits, not over	.005"
Clearance between lifter body and crankcase	.0005"-.0020"
Head diameter, overall	2.000" / 1.625"
Lift	.457" / .473"
Valve face angle	44°
Valve seat angle (in head)	45°
Seat width (in head)	1/16"
Seat eccentricity, not over (T.I.R.)	.004"
Stem diameter	.3413"-.3420"
Valve guide diameter (in head)	.343"
Rocker Arm Ratio	1.72:1
VALVE SPRINGS	
Free Length	2.250"
Pounds required to compress to 1.946" (Valve closed)	60 - 65
Pounds required to compress to 1.496" (Valve open)	155 - 165
CAMSHAFT	
Chain	
Type	Silent Chain
Adjustment	None
Length	.24"
Number of links	.48
Pitch	.500"
Width	.750"
Bearing Clearance	
Number	.5
New limits	.001"-.0022"
Worn limits, not over	.004"
Out-of-round, not over	.002"
Valve Timing (with ramp at .001" lift)	
Intake opens	21° B.T.D.C.
Intake closes	111° A.B.D.C.
Exhaust opens	73° B.B.D.C.
Exhaust closes	55° A.T.D.C.
Valve Lift	
Intake	.457"
Exhaust	.473"
Duration	
Intake	312°
Exhaust	308°
Valve Overlap	76°
CONNECTING RODS	
Bearing Material	Aluminum
Clearance between bearing and shaft --	
New limits	.0005" - .0028"
Worn limits, not over	.0035"
Diameter lower end, without bearing	2.6243" - 2.6250"
Length, center to center	6.75"
End play of rods on crank pin	.008" - .020"
PISTON RINGS	
Clearance between rings and sides of groove in piston --	
Compression rings	.0017" - .0040"
Oil rings	NONE - Side Sealing
Gap between ends	
Compression rings	.013" - .025"
Oil rings	.015" - .055"
Number of compression rings	2
Number of oil rings	1
Width of compression ring groove	.0802" - .0810"
Width of oil ring groove	.188" - .189"
Diameter at bottom of groove	
Oil ring	3.880" - 3.874"
Compression rings	3.843" - 3.849"
PISTON PINS	
Clearance between pin and piston --	
New limits	.0002" - .0004"
Pin length	3.030"
Pin diameter	.9994" - .9999"
PISTONS AND CYLINDERS	
Cylinder bore out-of-round (new or reground limit) Not over	.0005"
Piston Taper, not over	.0005" - .002"
Piston Material	Aluminum Alloy
Piston skirt top clearance	.0006" - .0010"
Piston skirt bottom clearance	-.0014" - +.0005"

Cylinder and piston sizes (as indicated by letters stamped on the cylinder head gasket surface). The letters are in groups of two for adjacent cylinders (such as "H" and "B") midway between the two cylinders. The letters denote the cylinder piston sizes as shown on page 6-53.

SPECIFICATIONS (Cont'd.)

Items	All Series Unless Otherwise Noted

Letter	Cylinder Size (Diameter in Inches)	Piston Size (Diameter in Inches)
A	4.3000 - 4.3002	4.2992 - 4.2994
B	4.3002 - 4.3004	4.2994 - 4.2996
C	4.3004 - 4.3006	4.2996 - 4.2998
D	4.3006 - 4.3008	4.2998 - 4.3000
E	4.3008 - 4.3010	4.3000 - 4.3002
H	4.3010 - 4.3012	4.3002 - 4.3004
J	4.3012 - 4.3014	4.3004 - 4.3006
K	4.3014 - 4.3016	4.3006 - 4.3008
L	4.3016 - 4.3018	4.3008 - 4.3010
M	4.3018 - 4.3020	4.3010 - 4.3012

Items	All Series Unless Otherwise Noted
OIL PUMP	
Oil pump type	Spur Gear
Backlash between drive gears	.001" - .013"
Clearance between pump body and gears --	
New limits	.001" - .004"
Worn limits, not over	.005"
No. of teeth on each gear	9
CRANKSHAFT AND MAIN BEARINGS	
Clearance, main bearings --	
New limits	.0001" - .0026"
Worn limits, not over	.0045"
Main bearing caps --	
Screw thread diameter	1/2"
Main bearing journal, diameter	3.250"
Main bearing journals, out-of-round not over	.00025"
Main bearing journal length --	
No. 1 and No. 5	1.1925"
No. 2 and No. 4	1.0595"
No. 3	1.0670"
Main bearings material	AT-20 Aluminum and M-100 Babbitt
Crankpin diameter	2.500"
Crankpin out-of-round not over	.00025"
End play in crankshaft --	
New limits	.002" - .012"
Worn limits	.015"
OIL PRESSURE REGULATOR	
Clearance between valve plunger and housing --	
New limits	.0020" - .0035"
Worn limits, not over	.005"
Normal pressure at 30 mph	
Minimum	35 psi
Idle (average)	10 psi
Spring	
Free length	2.57" - 2.69"
Lbs. required to compress to 1-7/16"	7-1/2 - 8-1/2
Valve opens at	35 - 40 psi

The following service information pertains only to 1975 model Cadillac cars. Refer to the 1974 Cadillac Shop Manual for service procedures common to 1974 and 1975 models.

(NOTE: When replacing production parts with service parts in Turbo Hydra-matic transmissions, be sure to consult the master parts catalogue to obtain the correct service parts. Service parts, in some instances, may vary from production parts in appearance and material.)

DIAGNOSIS

PRELIMINARY CHECKING PROCEDURE

CHECK TRANS. OIL LEVEL

CHECK OUTSIDE MANUAL LINKAGE AND CORRECT

CHECK ENGINE TUNE

INSTALL OIL PRESSURE GAGE

CONNECT TACHOMETER TO ENGINE

CAUTION: TOTAL RUNNING TIME FOR THIS COMBINATION NOT TO EXCEED 2 MINUTES.

CHECK OIL PRESSURES IN FOLLOWING MANNER

	RANGE	OIL PRESSURE READING	NORMAL P.S.I.	OIL PRESSURE PATTERN LOW–NORMAL–HIGH
1	NEUTRAL–BRAKES APPLIED ENGINE AT 1000 RPM		55 TO 70	
2	DRIVE IDLE SET ENGINE IDLE TO SPECIFICATIONS		60 TO 85	
3	DRIVE LEFT–BRAKES APPLIED ENGINE AT 1000 RPM		60 TO 90*	
4	DRIVE RIGHT OR LO–BRAKES APPLIED ENGINE AT 1000 RPM		135 TO 160	
5	REVERSE–BRAKES APPLIED ENGINE AT 1000 RPM		95 TO 150	
6	DRIVE LEFT–BRAKES APPLIED ENGINE AT 1000 RPM DOWNSHIFT SWITCH ACTIVATED		90 TO 110	
7	GOVERNOR CHECK–FOR UPSHIFT PROBLEM SEE PROCEDURE, NOTE 2		DROP OF 10 PSI OR MORE	
8	DRIVE – 30 MPH – CLOSED THROTTLE ON ROAD, OR ON HOIST**		55 TO 70	

* IF HIGH LINE PRESSURES ARE EXPERIENCED, SEE NOTE1.

** VEHICLE ON HOIST, DRIVING WHEELS OFF GROUND, SELECTOR IN DRIVE, BRAKES RELEASED, RAISE ENGINE TO 3000 R.P.M., CLOSE THROTTLE AND READ PRESSURE BETWEEN 2000 AND 1200 R.P.M.

1. High Line Pressures

Engines With EGR Valves

With Exhaust Gas Recirculation (EGR), the throttle is open enough in "Drive" range 1000 rpm to cause the EGR valve to open. When the EGR valve opens, exhaust gas enters the intake manifold which lowers intake manifold vacuum. When intake manifold vacuum is lowered, the transmission line oil pressure raises accordingly, and may go above the upper specification limit. For this reason, if high line pressures are obtained, proceed as follows:

1. Disconnect the EGR vacuum line at the EGR valve and plug the vacuum line.
2. Recheck line pressures as indicated on the Preliminary Checking Procedure Chart on page
3. If high line pressures are still obtained, continue below.

Engines Without EGR Valve Or If High Line Pressures Were Obtained With The EGR Vaccum Line Plugged

If high line pressures are experienced with the EGR line plugged, it may be that the engine is not producing enough vacuum to lower transmission line pressure within specifications. The newer engines with emission controls characteristically have lower engine vacuum than older past model engines. To obtain line pressures suitable for evaluation, it is recommended that vacuum be applied to the modulator, using an external vacuum source such as a Kent-Moore J-23738 hand operated vacuum device or its equivalent. The unit allows definite amounts of vacuum to be applied to the modulator so that consistent line pressures may be obtained for evaluation as follows:

1. Disconnect the vacuum hose to the modulator at the modulator and plug the vacuum hose.
2. Attach the hand operated vacuum device and apply 20" of vacuum.
3. Recheck line pressures according to the Preliminary Checking Procedure Chart, on page
4. If line pressures are still high, proceed to the specific diagnosis chart that applies to the malfunction encountered.
5. If line pressures are normal with external vacuum applied, check engine vacuum and vacuum systems for leaks.

2. Control Valve Assembly — Governor Line Pressure Check

1. Install line pressure gage.
2. Install tachometer.
3. Disconnect vacuum line to modulator.
4. With vehicle on hoist (driving wheels off ground), foot off brake, in drive, check line pressure at 1000 rpm.
5. Slowly increase engine rpm to 3000 rpm and determine if a line pressure drop occurs (10 psi or more).
6. If pressure drop of 10 psi or more occurs, disassembly, clean and inspect control valve assembly.
7. If pressure drop is less than 10 psi:

a. Inspect governor

1. Stuck valve.
2. Weight freeness.
3. Restricted orifice in governor valve.
4. Check governor valve entry and exhaust (.020" min.). For procedure, refer to current service manual.

b. Governor feed system

1. Check screen in control valve assembly or case.
2. Check for restrictions in governor pipe.
3. Check for fit of governor pipes in case holes.

PRELIMINARY DIAGNOSIS CHART
TRANSMISSION MALFUNCTION RELATED TO OIL PRESSURE

(PRESSURES OBTAINED BY THE PRELIMINARY CHECKING PROCEDURE, PAGE 2)

	1	2	3	4	5	6	7	8	
MALFUNCTION	NEUTRAL BRAKES APPLIED 1000 RPM	DRIVE IDLE	DRIVE LEFT– BRAKES APPLIED 1000 RPM	DRIVE–R BRAKES APPLIED 1000 RPM	REVERSE BRAKES APPLIED 1000 RPM	DRIVE LEFT– BRAKES APPLIED 1000 RPM DOWNSHIFT SWITCH ACTIVATED	PRESSURE DROP OCCURS WHILE ENGINE RPM INCREASES FROM 1000 TO 3000 RPM WHEELS FREE TO MOVE*	DRIVE 30 MPH CLOSED THROTTLE	POSSIBLE CAUSE OF MALFUNCTION
	OIL PRESSURE	OIL PRESSURE	OIL PRESSURE	OIL PRESSURE	OIL PRESSURE	OIL PRESSURE		OIL PRESSURE	
NO 1-2 UPSHIFT AND/OR DELAYED UPSHIFT	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	10 PSI DROP OR MORE	NORMAL	MALFUNCTION IN CONTROL VALVE ASSY.
	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	LESS THAN 10 PSI DROP	NORMAL	MALFUNCTION IN GOVERNOR OR GOVERNOR FEED SYSTEM
	NORMAL	HIGH	HIGH	NORMAL	NORMAL	NORMAL	DROP	HIGH	MALFUNCTION IN DETENT SYSTEM
	HIGH	HIGH	HIGH	NORMAL	HIGH	–	–	–	MALFUNCTION IN MODULATOR OR VACUUM FEED SYSTEM TO MODULATOR
SLIPPING–REVERSE	NORMAL	NORMAL	NORMAL	NORMAL	LOW	NORMAL	DROP	NORMAL	OIL LEAK IN FEED SYSTEM TO THE DIRECT CLUTCH
SLIPPING–1ST GEAR	NORMAL	LOW TO NORMAL	LOW TO NORMAL	LOW TO NORMAL	NORMAL	LOW TO NORMAL	–	LOW TO NORMAL	OIL LEAK IN FEED SYSTEM TO THE FORWARD CLUTCH
DOWNSHIFT WITH ZERO THROTTLE AND NO ENGINE BRAKING IN DRIVE	NORMAL	HIGH	NORMAL	NORMAL	NORMAL	–	–	HIGH	STATOR AND DETENT WIRES SWITCHED
NO DETENT DOWNSHIFTS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	LOW	NORMAL	NORMAL	MALFUNCTION IN DETENT SYSTEM

* DRIVE RANGE, VACUUM LINE DISCONNECTED FROM MODULATOR.

NOTE: A DASH (–) IN THE ABOVE CHART MEANS THAT THE OIL PRESSURE READING HAS NO MEANING UNDER THE TEST CONDITION.

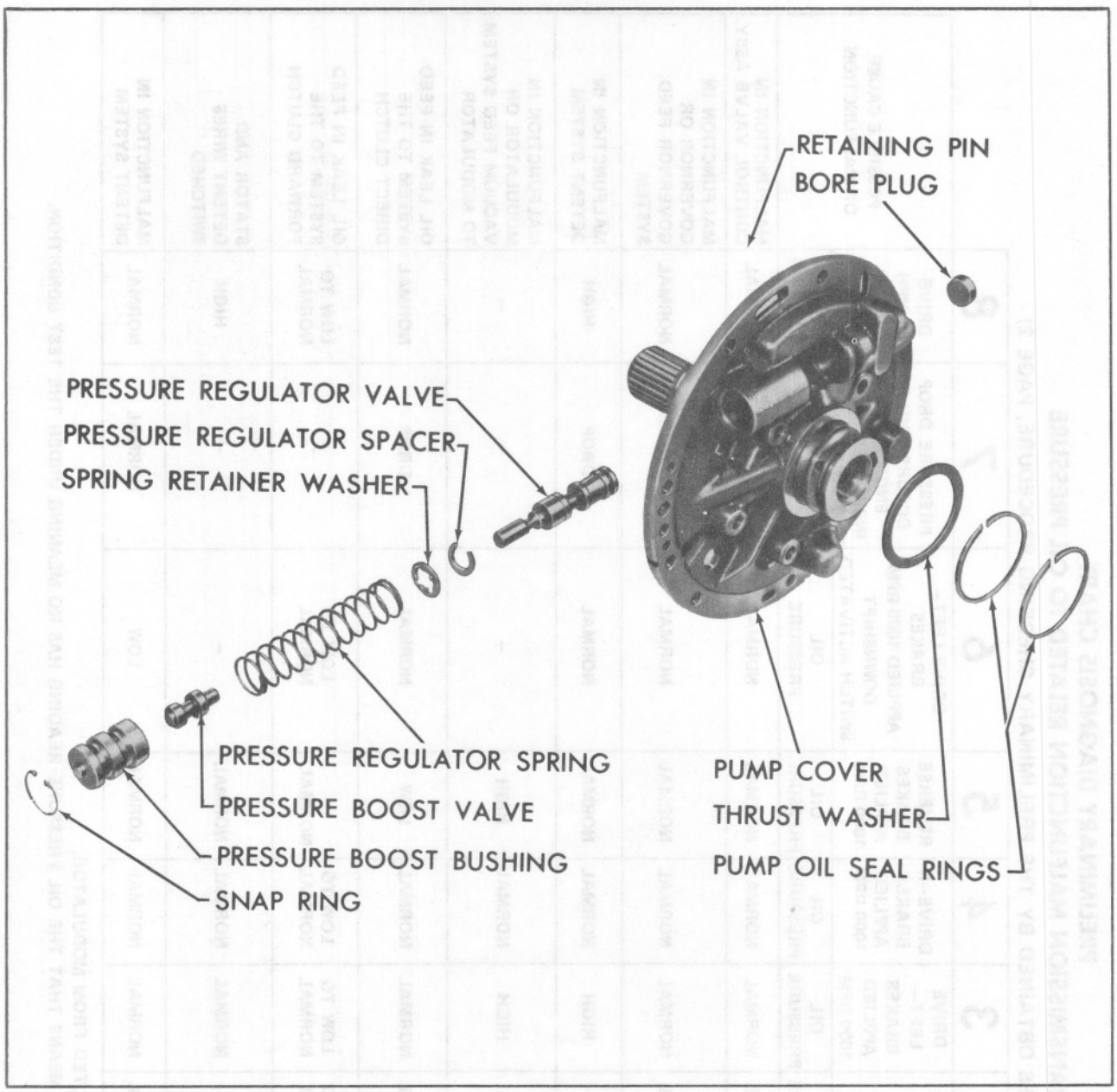


Fig. 7-1 Pump Cover—Exploded View

SERVICE INFORMATION

3. Oil Pump Assembly

Refer to Section 7, Note 39, 1974 Shop Manual. The cooler by-pass valve, seat and spring have been eliminated from the 1975 Turbo Hydra-matic 400 transmission pump cover, Fig. 7-1.

(NOTE: If teflon rings are being reused, make sure slit ends are assembled in same relation as cut Fig. 7-2.)

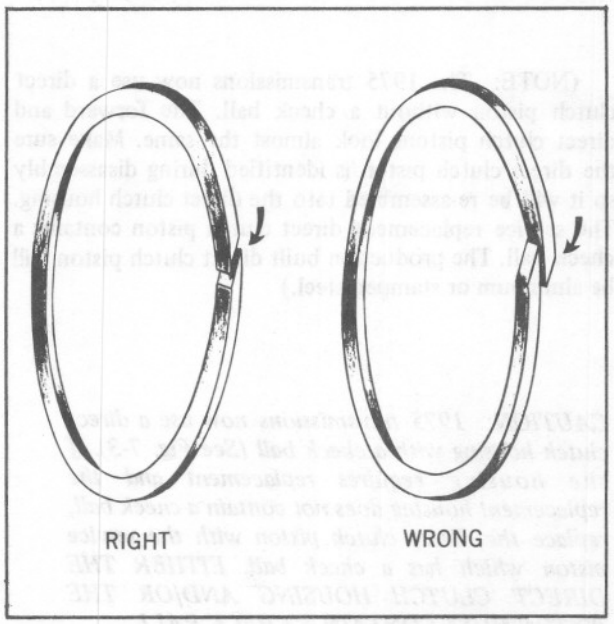


Fig. 7-2 Cut-in Teflon Rings

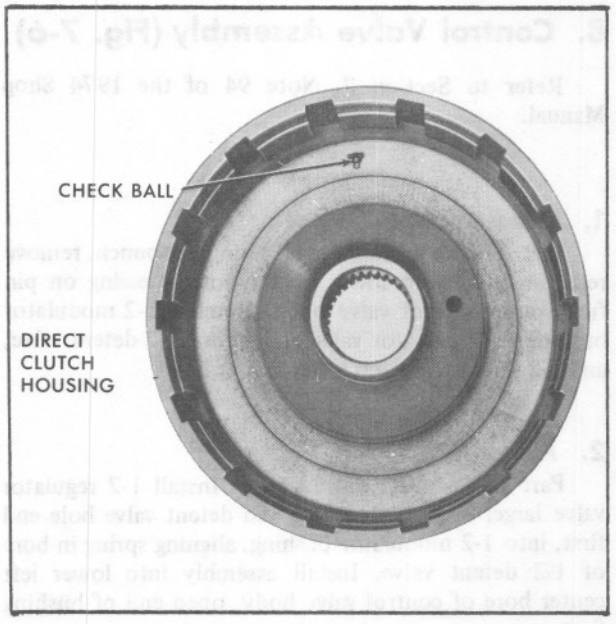


Fig. 7-3 Direct Clutch Housing

4. Forward Clutch Assembly — Disassembly

Refer to Section 7, Note 40, of the 1974 Shop Manual.

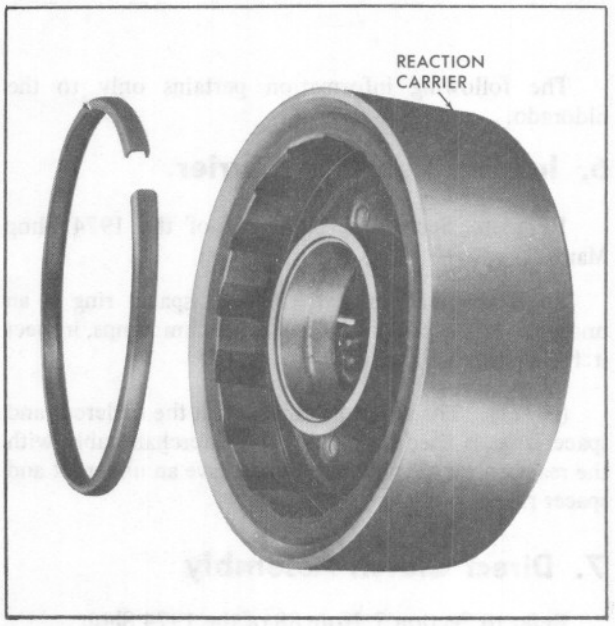


Fig. 7-4 Reaction Carrier with Spacer Ring

(NOTE: The transmissions now use a direct clutch piston without a check ball. The forward and direct clutch pistons look almost the same. Make sure the forward clutch piston is identified during disassembly so it will be reassembled into the forward clutch housing. The production built forward clutch piston can be aluminum or stamped steel.)

CAUTION: Production built transmissions now use a direct clutch housing with a check ball (See Fig. 7-3). If the housing requires replacement and the replacement housing does not contain a check ball, replace the direct clutch piston with the service piston which has a check ball. EITHER THE DIRECT CLUTCH HOUSING AND/OR THE PISTON MUST CONTAIN A CHECK BALL.

5. Inspection of Reaction Carrier Assembly

Refer to Section 7, Note 43h of the 1974 Shop Manual.

If the reaction carrier has a spacer ring in an undercut at the bottom of the roller cam ramps, inspect it for damage (Fig. 7-4).

The reaction carrier with the undercut and spacer ring is used optionally and interchangeably with the reaction carrier which does not have an undercut and spacer ring.

The following information pertains only to the Eldorado.

6. Inspect Reaction Carrier

Refer to Section 7, Note 87f of the 1974 Shop Manual.

1. If the reaction carrier has a spacer ring in an undercut at the bottom of the roller cam ramps, inspect it for damage (Fig. 7-5).

(NOTE: The reaction carrier with the undercut and spacer ring is used optionally and interchangeably with the reaction carrier which does not have an undercut and spacer ring.)

7. Direct Clutch Assembly

Refer to Section 7, Note 88 of the 1974 Shop Manual.

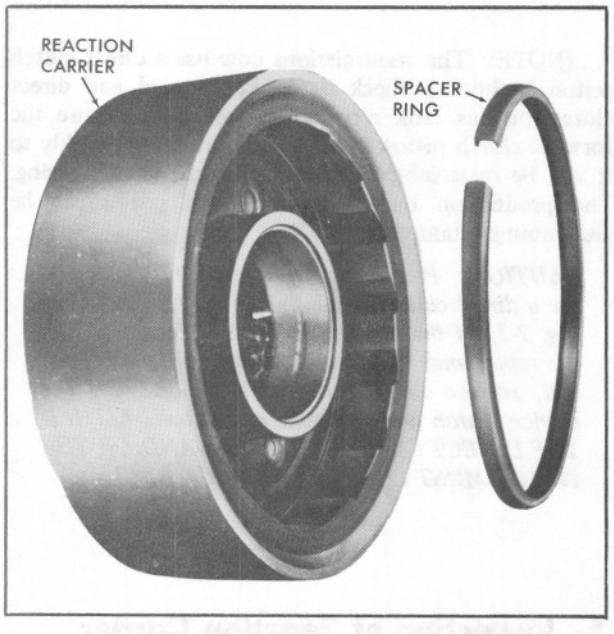


Fig. 7-5 Reaction Carrier with Spacer Ring (Eldorado)

(NOTE: The 1975 transmissions now use a direct clutch piston without a check ball. The forward and direct clutch pistons look almost the same. Make sure the direct clutch piston is identified during disassembly so it will be re-assembled into the direct clutch housing. The service replacement direct clutch piston contains a check ball. The production built direct clutch piston will be aluminum or stamped steel.)

CAUTION: 1975 transmissions now use a direct clutch housing with a check ball (See Fig. 7-3). If the housing requires replacement and the replacement housing does not contain a check ball, replace the direct clutch piston with the service piston which has a check ball. EITHER THE DIRECT CLUTCH HOUSING AND/OR THE PISTON MUST CONTAIN A CHECK BALL.

8. Control Valve Assembly (Fig. 7-6)

Refer to Section 7, Note 94 of the 1974 Shop Manual.

1. Disassembly

Part A, Step 8 should read: Using pin punch, remove retaining pin from lower center bore, pressing on pin from outer side of valve body. Remove 1-2 modulator bushing, 1-2 regulator valve and spring, 1-2 detent valve, and 1-2 shift valve from lower center bore.

2. Assembly

Part C, Step 14 should read: Install 1-2 regulator valve larger stem first, spring and detent valve hole end first, into 1-2 modulator bushing, aligning spring in bore of 1-2 detent valve. Install assembly into lower left center bore of control valve body, open end of bushing first.

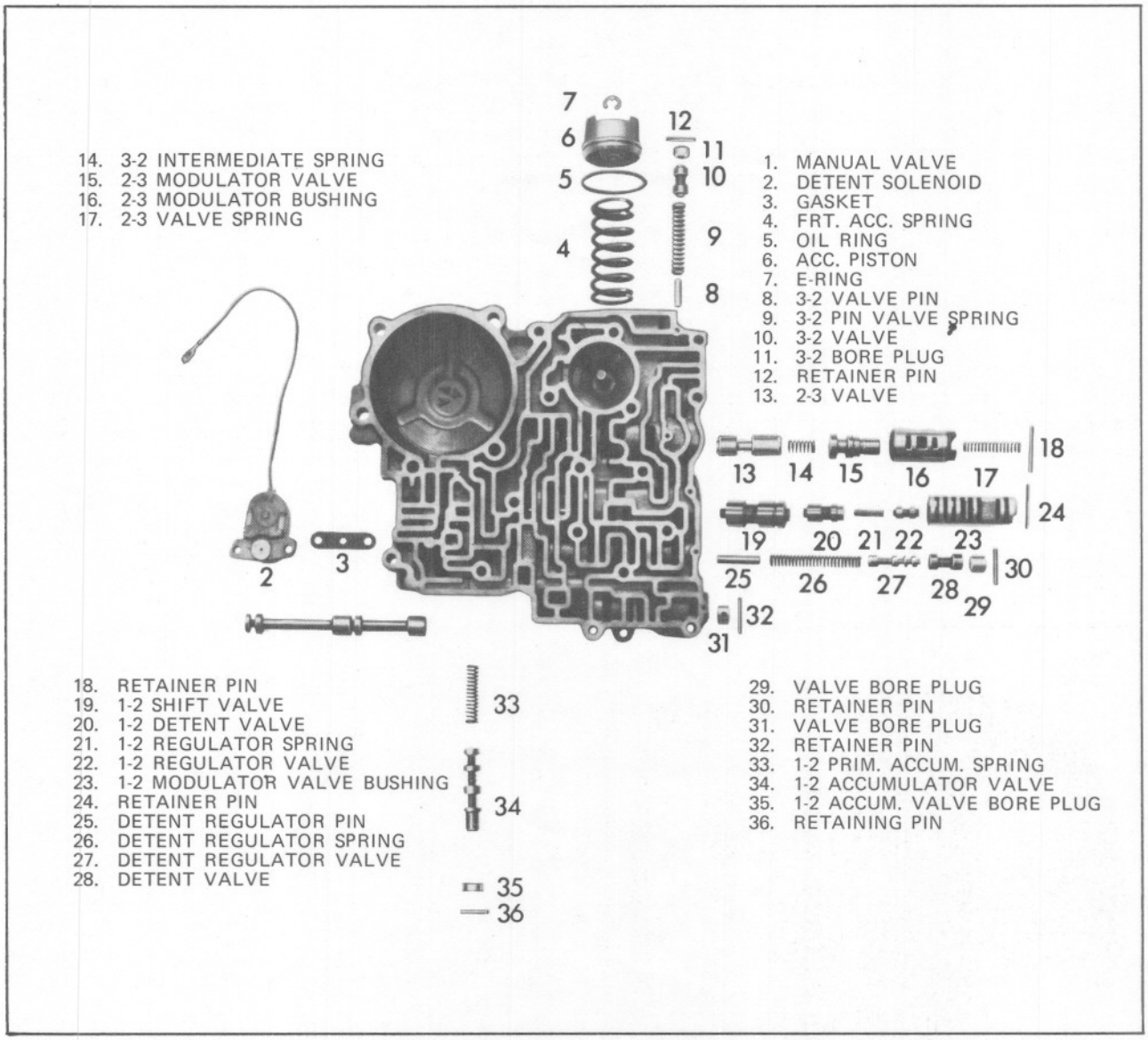


Fig. 7-6 Control Valve—Exploded View

FUEL SYSTEM

GENERAL DESCRIPTION

1. Design Features

The 1975 fuel tank is similar in design to previous tanks except that a restrictor has been added to the filler neck to prevent filling the tank with leaded fuel.

The restrictor, Fig. 8-1, has an opening sized to allow entry of the unleaded filler nozzle and to prevent insertion of a leaded gasoline filler nozzle. When the unleaded fuel nozzle is inserted in the filler opening in the restrictor, the spring valve is pushed aside to allow full fuel flow.

In an emergency situation, small amounts of leaded fuel may be added. However, the restrictor and spring valve prevent filling in the normal manner.

Except in extreme emergencies, leaded gasoline should not be used in 1975 Cadillacs as it will render the catalytic material ineffective.

(NOTE: 1975 Cadillacs built for operation in foreign countries (Option K75) do not incorporate the restricted fillerneck described above.)

The filler cap used in 1975 is a screw-on type rather than the tab-lock design previously used. The cap is a non-vented design and is sealed to the filler neck by an O-ring. To prevent damage to the O-ring by over tightening, the cap will "ratchet" when the correct torque is applied.

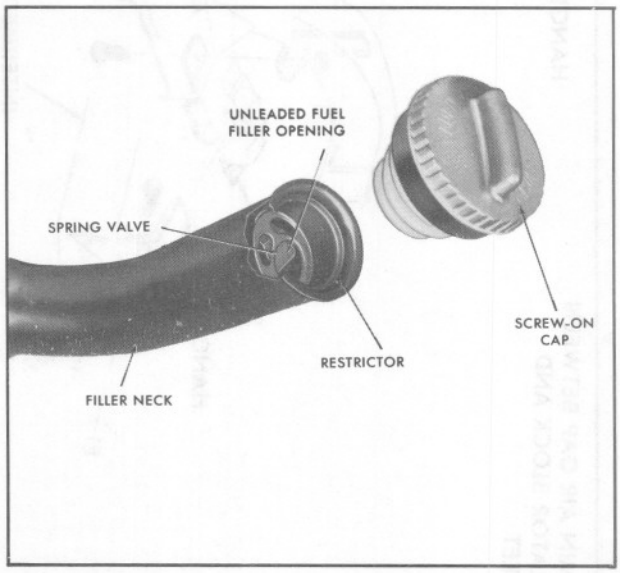


Fig. 8-1 Fuel Tank Filler Neck

EXHAUST SYSTEM GENERAL DESCRIPTION

2. Design Features

Figures 8-2 and 8-3 show the 1975 C-car and Eldorado exhaust systems respectively. The C-car system incorporates the following parts: the exhaust pipe (also called "crossover" pipe or "Y" pipe), the catalytic converter, the intermediate pipe, the muffler, and the resonator assembly. In both systems, the muffler outlet pipe, resonator and tailpipe are all part of the resonator assembly.

Both exhaust systems are supported at the rear of the converter; rear of the muffler; and rear of the resonator, by rubber isolated hangers to provide proper alignment.

The C-car exhaust system incorporates a vibration damper as a part of the muffler hanger assembly. It is used to absorb exhaust system vibrations and should be reinstalled as shown in Fig. 8-2 whenever the exhaust system is replaced.

Periodic maintenance of the exhaust system is not required, however, if the car is raised for other service, it is advisable to check the general condition of the catalytic converter, pipes and muffler.

3. Catalytic Converter

The catalytic converter, Figs. 8-2 and 8-3, is an emission control device added to the exhaust system to reduce hydrocarbon and carbon monoxide pollutants from the exhaust gas. The converter contains pellets coated with catalytic material containing platinum and palladium. The catalytic material promotes burning or oxidization of the pollutants as the exhaust gas passes thru the converter on its way to the tailpipe.

In the event that the catalytic pellets must be replaced, see Note 7.

(NOTE: The catalytic converter requires the use of unleaded fuel only.)

Unleaded gasoline is used to reduce combustion chamber deposits and to prevent lead contamination of the catalyst that will render it ineffective. Contamination of the catalyst by the use of leaded fuels will require frequent replacement of the catalytic material.

(NOTE: 1975 Cadillacs built for operation in foreign countries (Option K75) do not incorporate the catalytic converter described above.)

4. EFE Valve

The Early Fuel Evaporation (E.F.E.) valve is installed at the junction of the right hand exhaust manifold and exhaust pipe on all 1975 Cadillac cars, Fig. 8-4. The EFE valve is a vacuum operated "heat valve" which directs exhaust gases through the exhaust

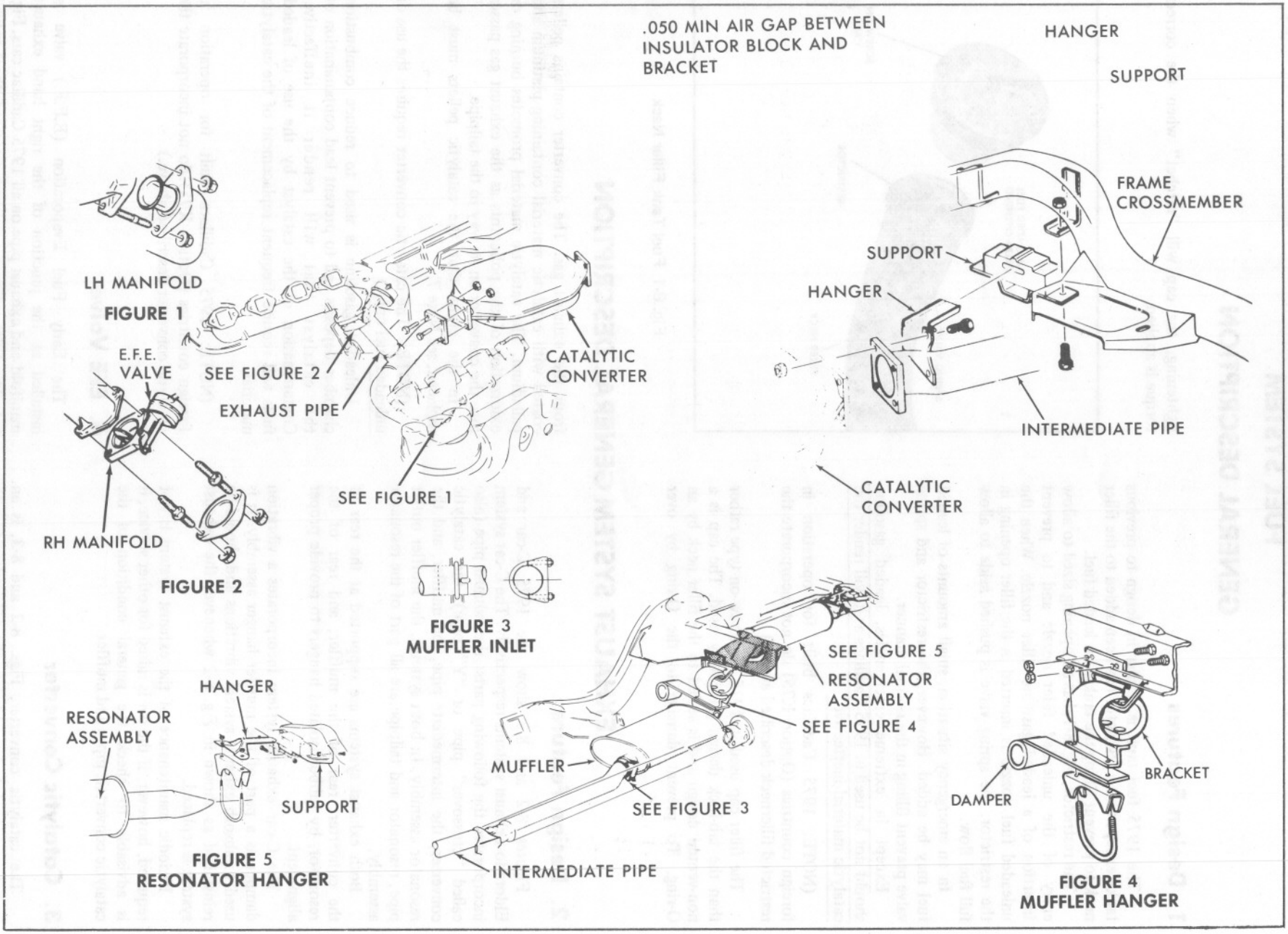


Fig. 8-2 Exhaust System - Except Eldorado

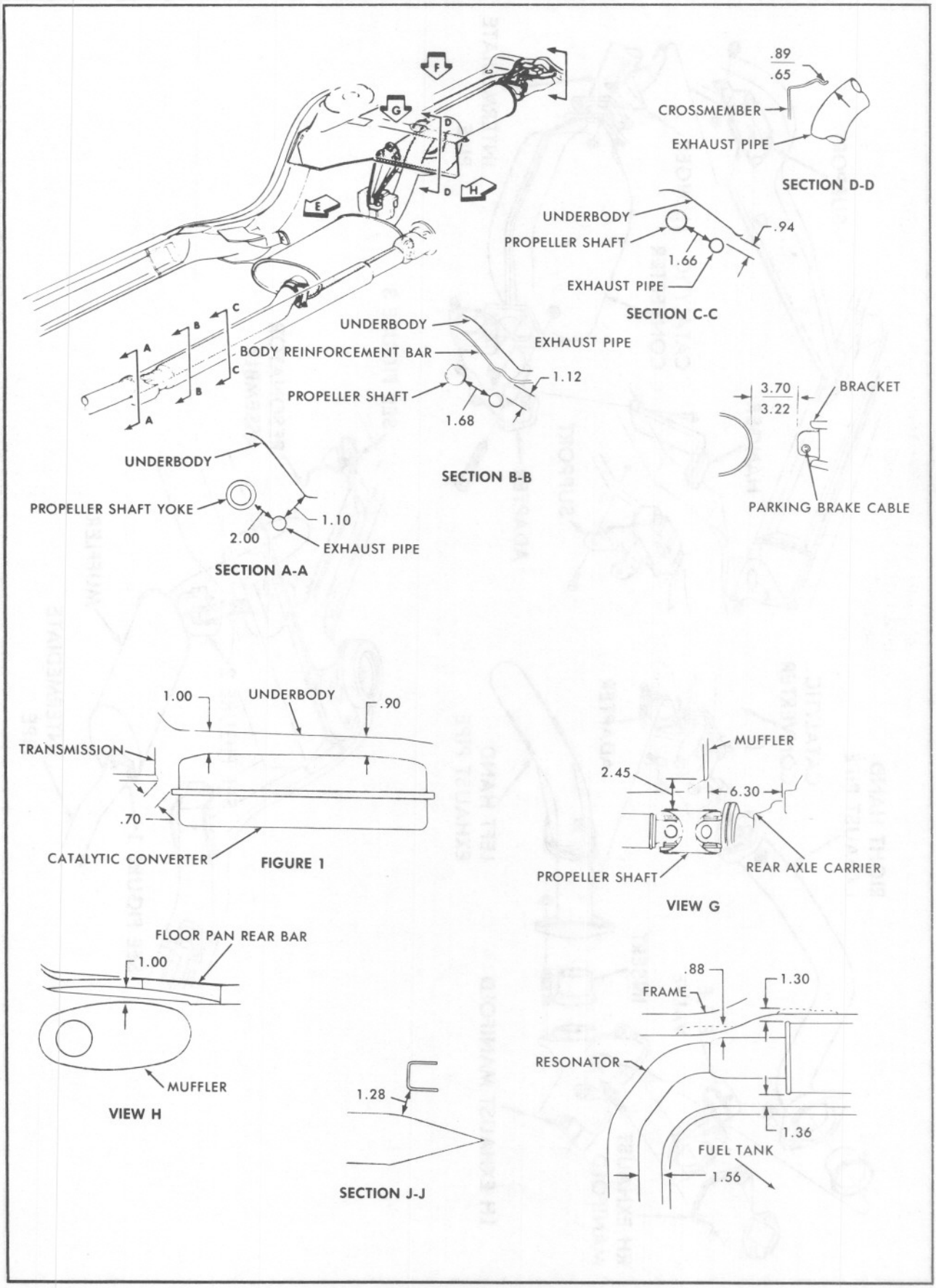


Fig. 8-2 Exhaust System - Except Eldorado

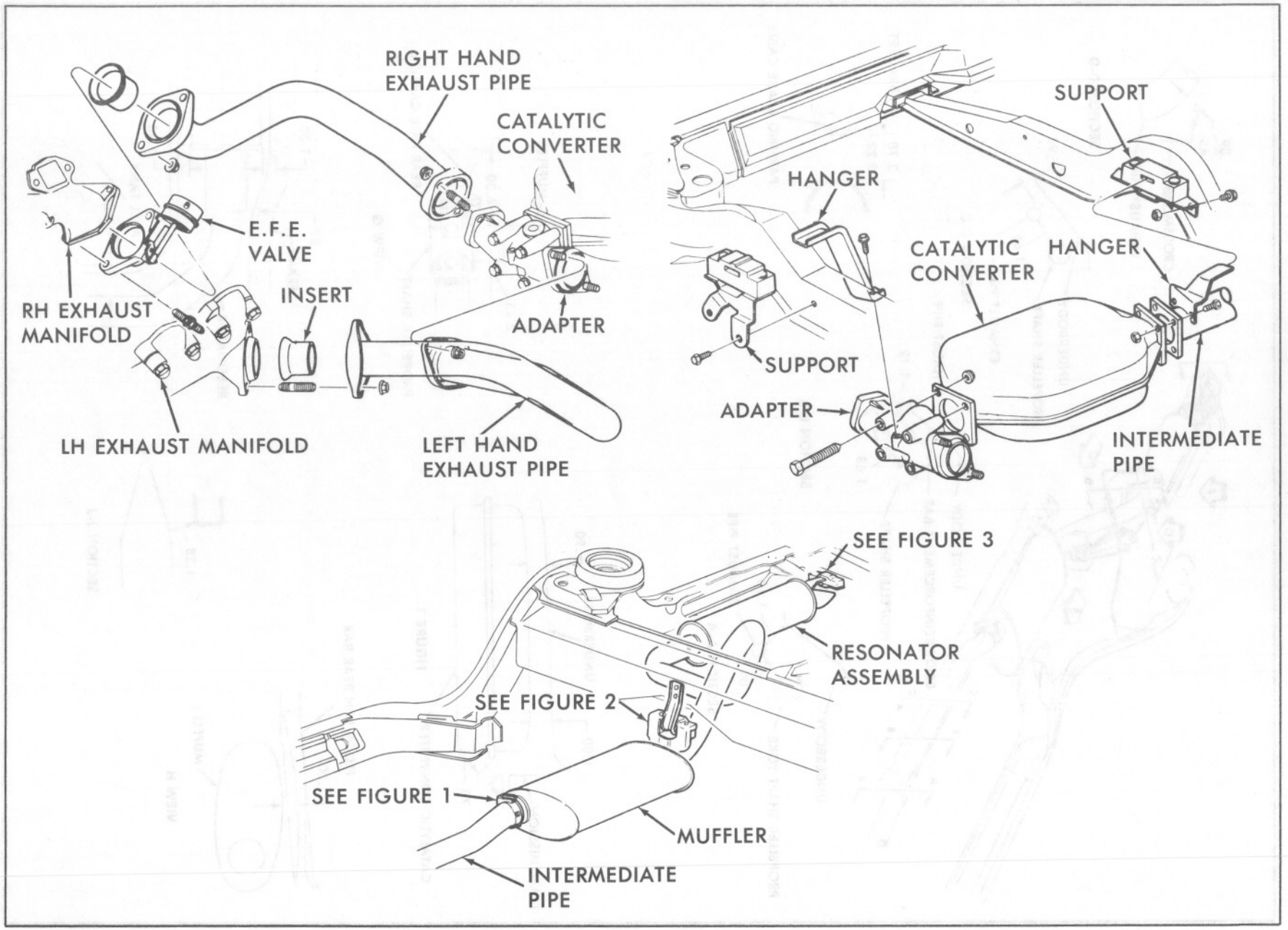


Fig. 8-3 Exhaust System - Eldorado

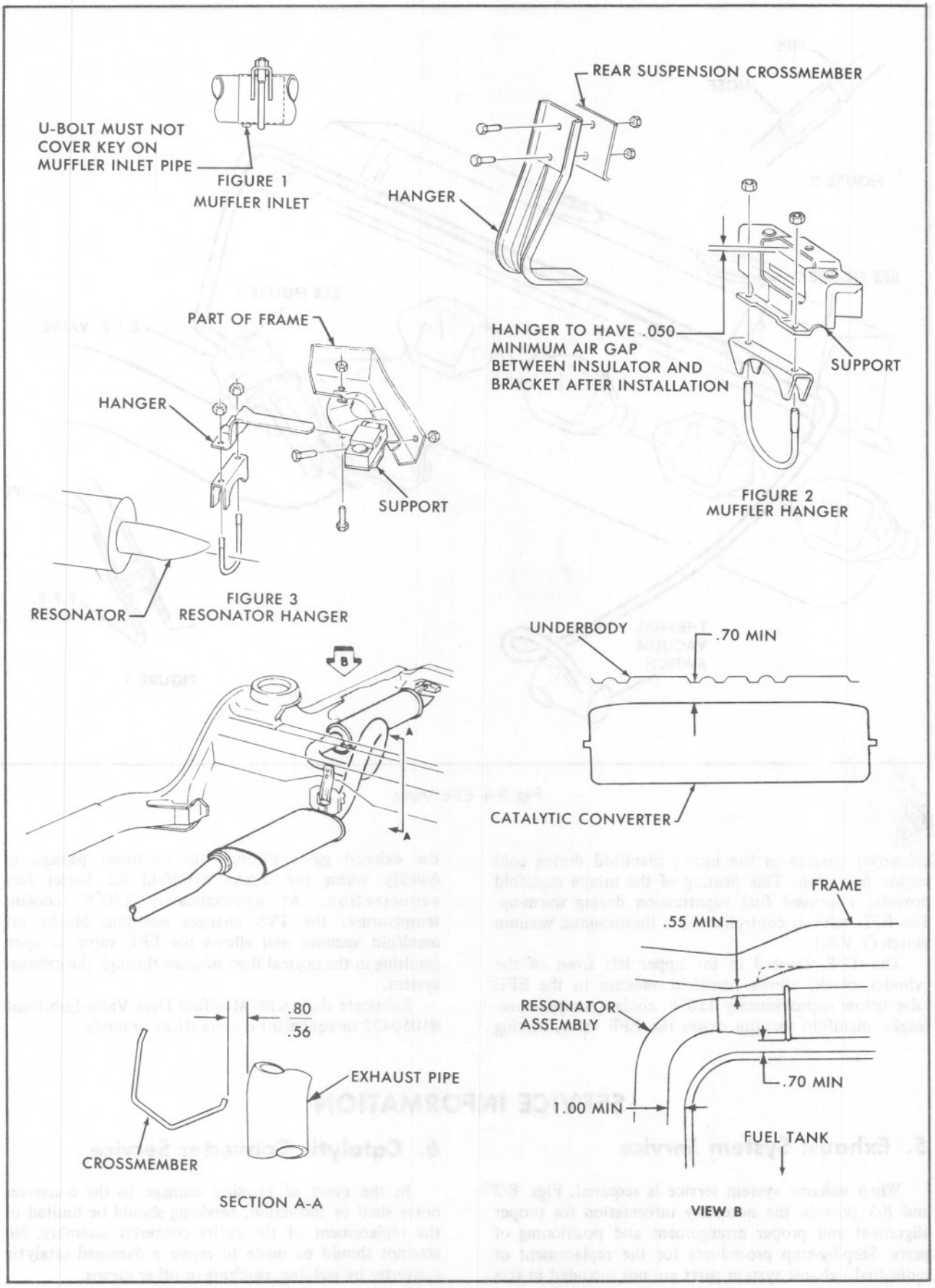


Fig. 8-3 Exhaust System - Eldorado

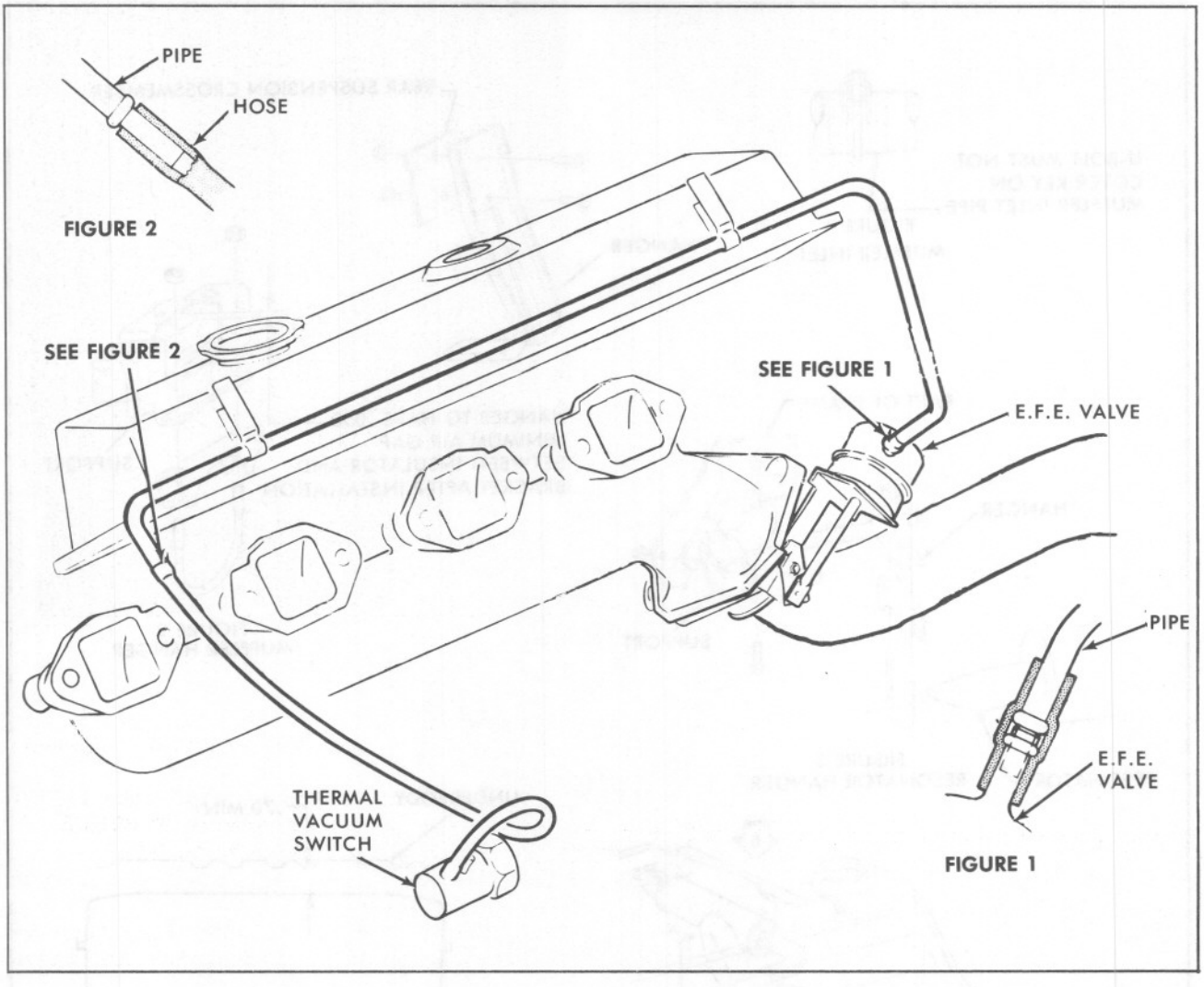


Fig. 8-4 EFE Valve

cross-over passage in the intake manifold during cold engine operation. This heating of the intake manifold provides improved fuel vaporization during warm-up. The EFE valve is controlled by a thermostatic vacuum switch (T.V.S.).

The TVS, located in the upper left front of the cylinder block, allows manifold vacuum to the EFE valve below approximately 150°F. coolant temperature. Intake manifold vacuum closes the EFE valve, forcing the exhaust gases through the crossover passage to quickly warm the intake manifold for better fuel vaporization. At approximately 150°F. coolant temperature, the TVS changes position, blocks off manifold vacuum and allows the EFE valve to open resulting in the normal flow of gases through the exhaust system.

Lubricate shaft with Manifold Heat Valve Lubricant #1050422 or equivilant if valve sticks or binds.

SERVICE INFORMATION

5. Exhaust System Service

When exhaust system service is required, Figs. 8-2 and 8-3 provide the necessary information for proper alignment and proper arrangement and positioning of parts. Step-by-step procedures for the replacement of individual exhaust system parts are not included in this supplement as no special steps are required. Refer to Note 6 for servicing of the catalytic converter.

6. Catalytic Converter Service

In the event of physical damage to the converter outer shell or insulation, servicing should be limited to the replacement of the entire converter assembly. No attempt should be made to repair a damaged catalytic converter by welding, patching or other means.

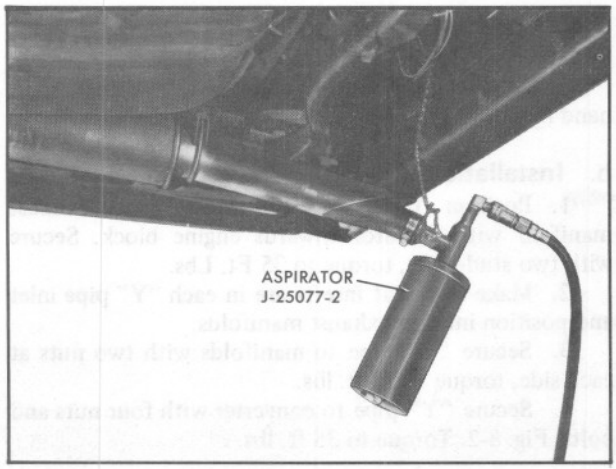


Fig. 8-5 Installing Aspirator

7. Catalyst Replacement — On Car

If necessary, the catalyst in the converter can be replaced on the car with Tool No. J-25077.

a. Removal

1. Install aspirator, Fig. 8-5.
2. Connect air supply line to aspirator to create a vacuum in the converter to hold catalyst in place when fill plug is removed.
3. Remove converter fill plug with 3/4" hex wrench or Tool No. J-25077-3, Fig. 8-6.
4. Clamp on vibrator, Fig. 8-7.
5. Install empty catalyst container to converter, Fig. 8-8.
6. Disconnect air supply to aspirator and connect air supply to vibrator. Catalyst will now drain from the converter into the empty container.
7. When all the catalyst has been removed from the converter, disconnect air supply to vibrator and remove container from the converter.
8. Discard used catalyst.

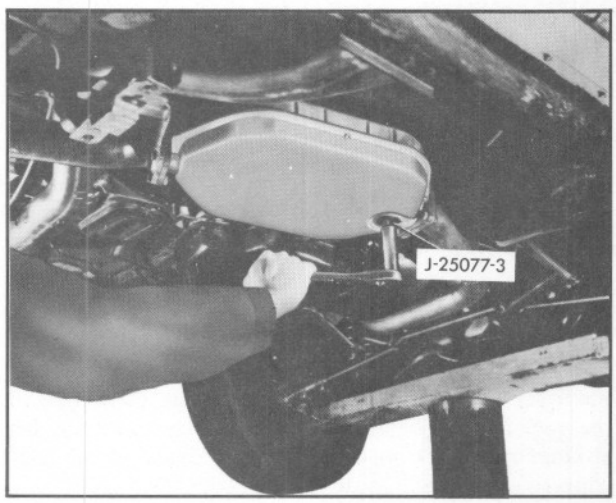


Fig. 8-6 Removing Converter Fill Plug

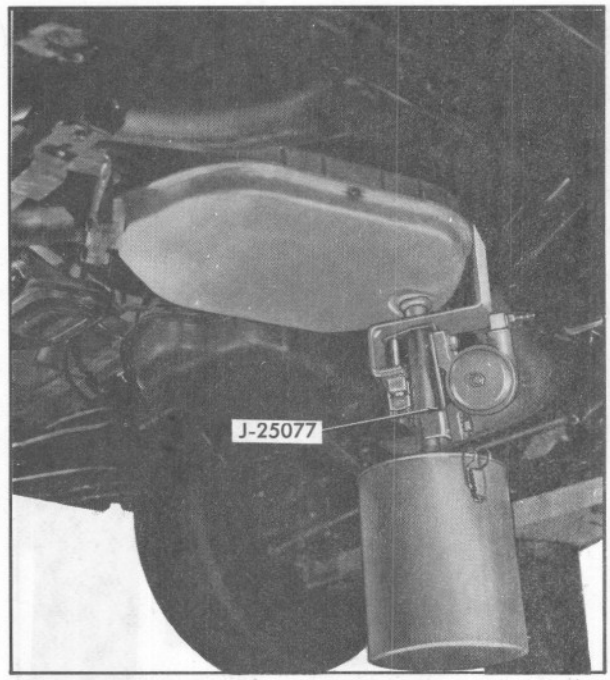


Fig. 8-7 Installing Vibrator

b. Installation

1. Fill container with approved replacement catalyst.
2. Install fill tube extension to the fixture, Fig. 8-9.
3. Connect air supply to aspirator and vibrator.
4. Attach catalyst container to the fixture.
5. After the catalyst stops flowing, disconnect air supply to the vibrator.
6. Remove vibrator and check that catalyst has filled the converter flush with fill plug hole. Add catalyst if required.

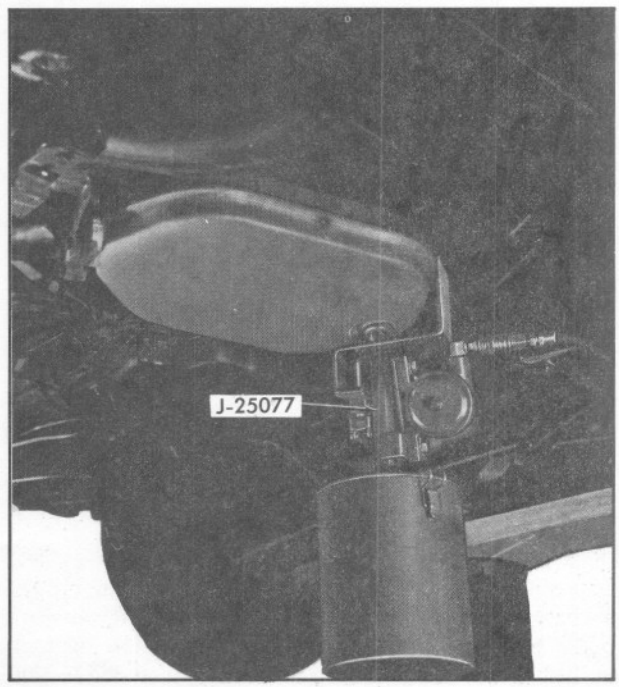


Fig. 8-8 Removing Catalyst

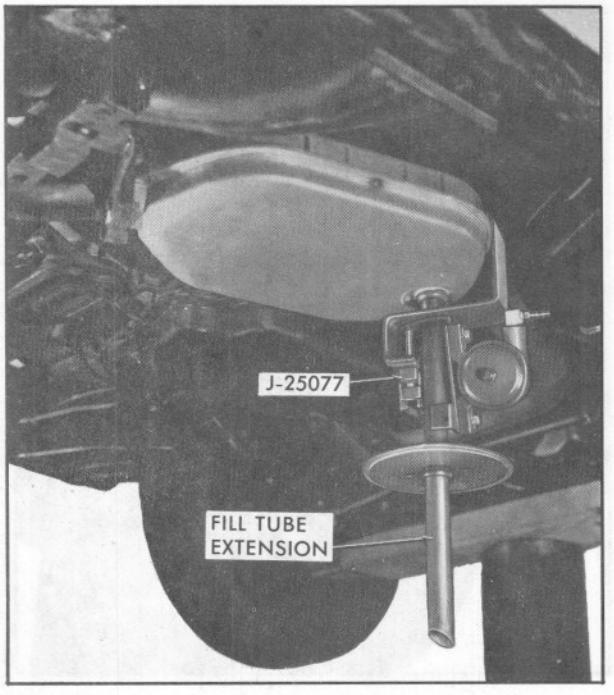


Fig. 8-9 Fill Tube Extension

7. Apply an anti-seize compound to the fill plug, install and tighten to 50 ft. lbs.

8. Disconnect air supply to aspirator and remove.

8. EFE Valve (Except Eldorado)

a. Removal

1. Working under car, remove four bolts and nuts holding "Y" pipe to catalytic converter, Fig. 8-2.

2. Remove two nuts (each side) holding "Y" pipe to exhaust manifolds and remove "Y" pipe from chassis.

3. Remove two studs holding EFE valve to right hand manifold and remove valve.

b. Installation

1. Position EFE valve to right hand exhaust manifold with actuator towards engine block. Secure with two stud-bolts, torque to 35 Ft. Lbs.

2. Make sure seat inserts are in each "Y" pipe inlet and position inlet to exhaust manifolds.

3. Secure "Y" pipe to manifolds with two nuts at each side, torque to 30 ft. lbs.

4. Secure "Y" pipe to converter with four nuts and bolts, Fig. 8-2. Torque to 35 ft. lbs.

9. EFE Valve (Eldorado only)

a. Removal

1. Working under car remove right hand exhaust pipe be removing two nuts at each end of pipe, Fig. 8-3.

2. Remove two studs holding EFE valve to right hand exhaust manifold and remove valve.

b. Installation

1. Position EFE valve to right hand exhaust manifold with actuator towards engine block and secure with two studs, Fig. 8-3. Torque to 35 ft. lbs.

2. Make sure seat insert is installed in exhaust pipe inlet and position pipe between manifold and adapter.

3. Secure exhaust pipe with two nuts at each end. Torque to 30 ft. lbs.

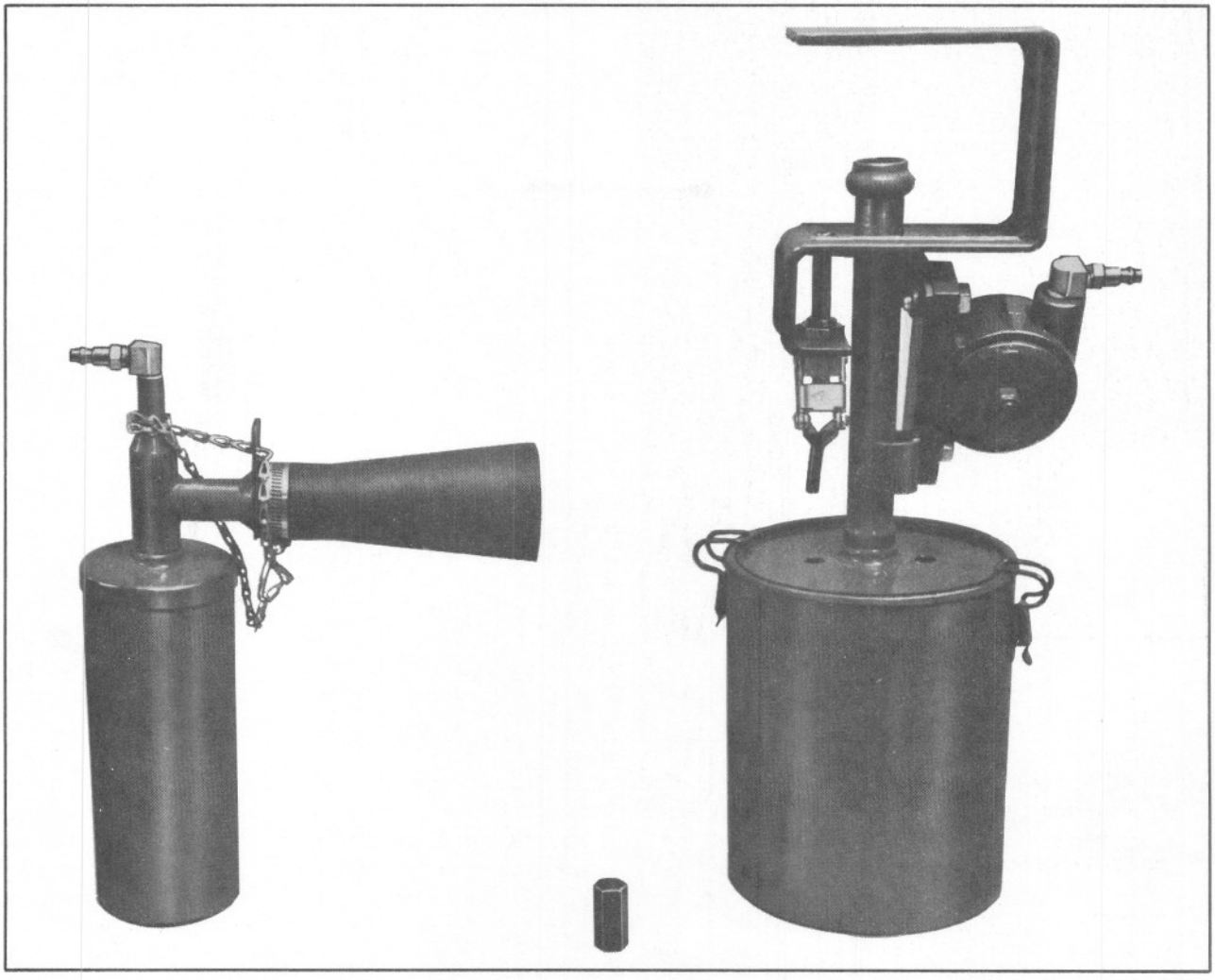


Fig. 8-10 Special Tools

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM, DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF THE STEERING COLUMN AND/OR STEERING WHEEL UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS.

A.C.R.S. DISCONNECTION PROCEDURE

Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

THE FOLLOWING INFORMATION PERTAINS ONLY TO THE 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR PROCEDURES COMMON TO 1974 AND 1975 MODELS.

GENERAL DESCRIPTION

A constant ratio steering gear (17.5:1) is used on Fleetwood Seventy-Fives and Commercial vehicles. Variable ratio power steering, (16.0:1 on center, 13.0:1 at full turn) is utilized on all Cadillacs except Eldorado. Variable ratio power steering (20.0:1 on center, 16.0:1 at full turn) is utilized for Eldorado.

Steering Pump

The new Steering Pump Pulley is attached and retained on the pump by a pressed fit to the steering pump shaft. New special tools are required to press the pulley onto the shaft and to remove it.

SERVICE INFORMATION

1. Steering Pump Pulley

a. Removal

1. Remove steering pump and bracket assembly from engine.
2. Clamp mounting bracket in vice.
3. Remove steering pump pulley from shaft using J-25034 steering pump pully remover, Fig. 9-1.

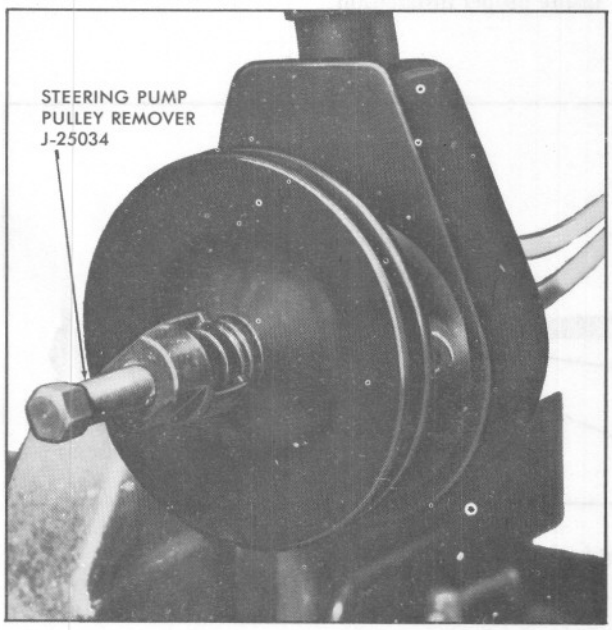


Fig. 9-1 Pulley Remover

b. Installation

1. Position steering pump pulley on shaft and screw steering pump pulley installer J-25033, Fig. 9-2 into shaft as far as it will go.
2. Make certain that the pulley is started evenly and that the steering pump pulley installer fits flush with the hub of the pulley.
3. Press the pulley onto the shaft until the hub is

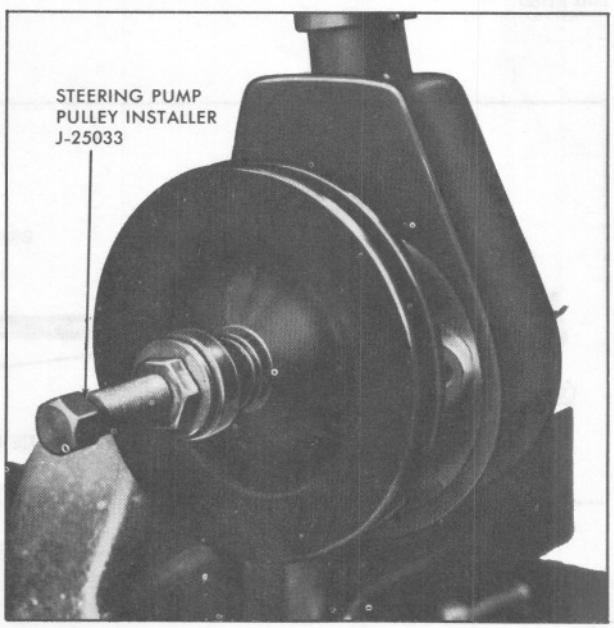


Fig. 9-2 Pulley Installer

Fig. 9-3 Hub to Shaft Fit

flush with the end of the shaft Fig. 9-3.

(NOTE: Large nut on tool has left hand threads.)

2. Lubrication Fittings

"C" Car

Lubrication fittings have been added at the seven pivot points in the steering linkage, Fig. 9-4. Consult Section O for proper lubrication schedule.

Eldorado

Four lubrication fittings have been added to the tie rod ends.

Eldorado

3. Lower Steering Shaft — A.C.R.S. Only

A two piece lower steering shaft, Fig. 9-5 is used on Eldorados equipped with the Air Cushion Restraint System; the same as in 1974.

1. Check for lower steering shaft collapse by measuring as shown in Fig. 9-6.

2. If the shaft measures less than 6-1/8 inches, replace the lower shaft.

4. Pitman Arm Eldorado

a. Removal

1. Remove two plastic retainers securing flexible coupling shield to frame side rail and remove shield.

2. Disconnect and plug power steering hoses.

3. Remove one screw securing steering gear to flexible coupling.

4. Raise car and remove one screw from cooler line bracket.

5. Remove cotter pin and nut from pitman arm to drag link stud.

6. Remove three screws securing steering gear to frame.

7. Remove pitman arm stud from drag link using Puller J-24319. Slide the gear assembly forward and downward to remove from car.

8. Remove nut and lock washer from pitman shaft, and using Pitman Arm Puller, J-6632, remove pitman arm from shaft. Mark pitman arm to housing location to insure proper installation.

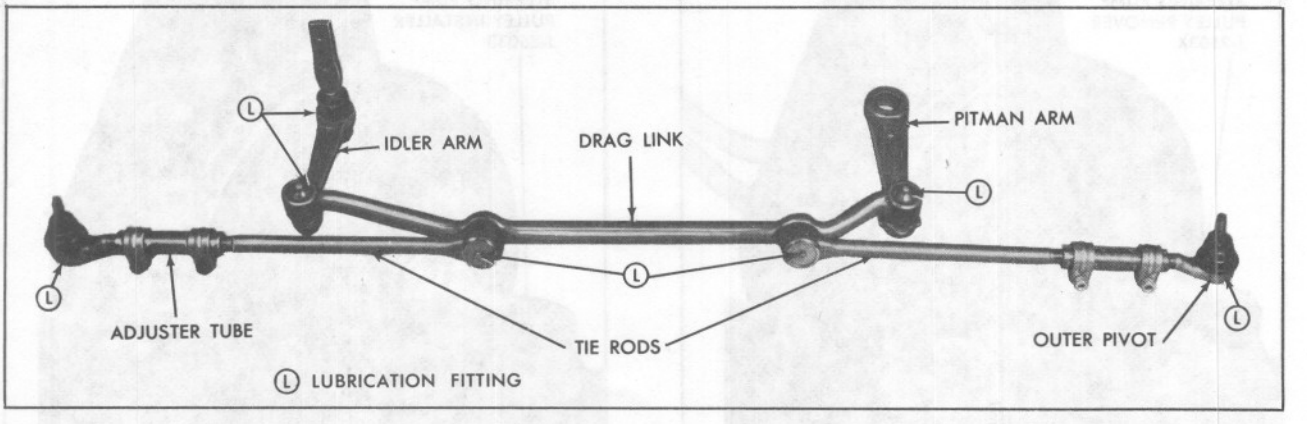


Fig. 9-4 Steering Linkage

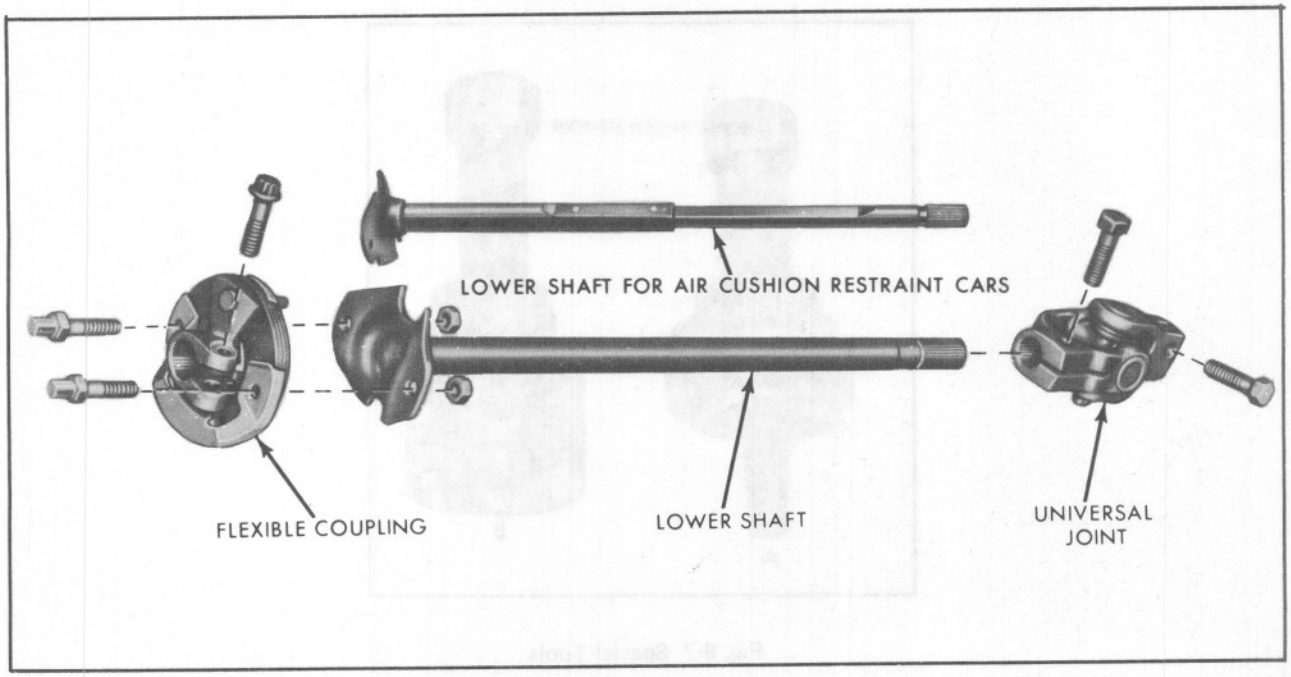


Fig. 9-5 Steering Shafts

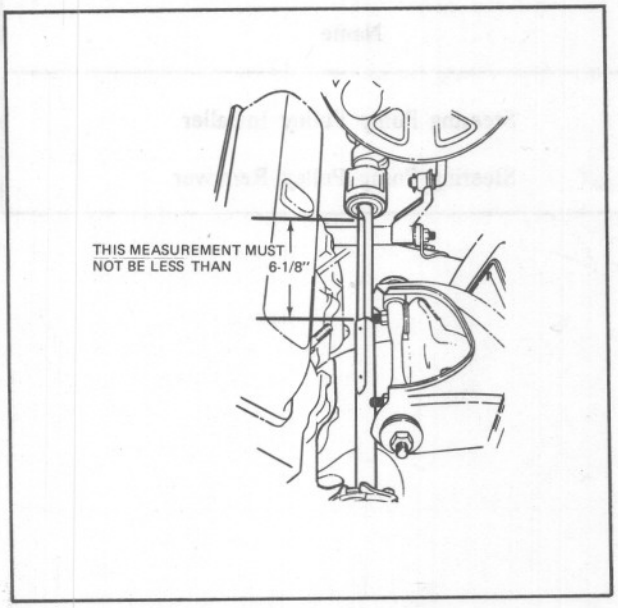


Fig. 9-6 Checking Lower Shaft for Collapse

b. Installation

1. Install pitman arm on pitman shaft and tighten to 185 foot-pounds.

2. Align steering gear shaft with flexible coupling and install steering gear shaft into flexible coupling. Align pitman shaft to drag link.

3. Install three steering gear to frame screws, and tighten to 70 foot-pounds.

4. Install and tighten pitman arm stud nut to 60 foot-pounds and install cotter pin.

5. Install one screw securing cooler line bracket and lower car.

6. Install screw securing steering gear to flexible coupling, tighten to 20 foot-pounds.

7. Install power steering hoses.

8. Install flexible coupling shield and secure with plastic retainers.

9. Start engine. Check level of power steering fluid and steering operation.

TORQUE SPECIFICATION

Material Number	Application	Thread Size	Foot-Pounds
280M	Steering Gear Side Cover Screws	3/8-16	45

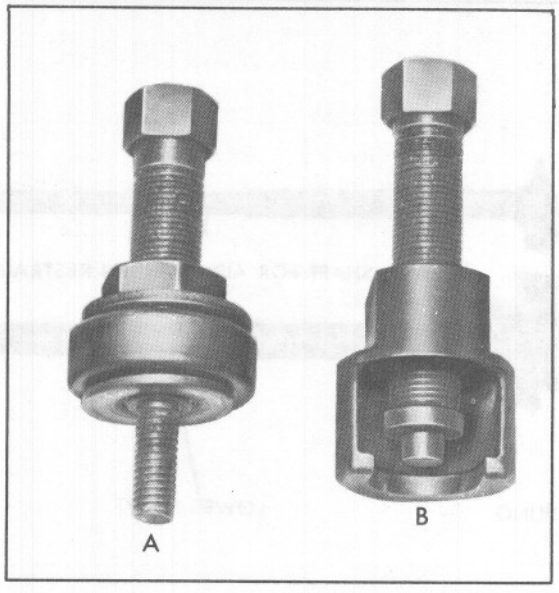


Fig. 9-7 Special Tools

Key	Tool No.	Name
A	J-25033	Steering Pump Pulley Installer
B	J-25034	Steering Pump Pulley Remover

WHEEL, VALVE AND FASTENING TABLE

Wheel, Valve, and Fastening Table	Calais, De Ville, and Brougham	Fleetwood Seventy Five Commercial Vehicle	Eldorado
Wheel Size and Flange Type	15x6JK	15 x 6JK	15x6JK
Spider to Rim Attachment	Spot Welded	Riveted	Riveted
Offset (Rim Center Line to Mounting Surface)	.29 In.	.29 In.	3.31 In.
Wheel Identification	SC	SB	SD
Valve Stem	T.R. 413 or T.R. 418	T.R. 413 or T.R. 418	T.R. 417
(Number of Fasteners), Bolt Circle	(5), 5.0 In.	(5), 5.0 In.	(5), 5.0 In.
Fastener Torque	80-100 ft. lbs.	80-100 ft. lbs.	100-130 ft. lbs.

GENERAL DESCRIPTION

Wheels

The wheels used are of steel construction. The center or spider and rim sections are joined together by spot welds or rivets. Wheels are attached with five 1/2-20 right hand thread cone face nuts. Replacement wheels must be equivalent to original equipment wheels in load capacity, diameter, rim width, and offset.

Use of Tire Chains

Tire chains may be used on the drive wheels of all models equipped with recommended size tires. On models equipped with fender skirts, the skirts should be removed when tire chains are used.

Tires

The tires are designed to operate with loads up to the full rated load capacity, when inflated to the recommended pressures. Correct tire pressures and driving habits have an important influence on tire life. When replacement is necessary, the original equipment type tire should be used. Refer to the Tire Inflation placard on the glove box door.

Tire Size And Load Rating

Tire sizes and load ratings are indicated by a combination of numbers and letters such as LR78-15, load range B. The first letter designates the load the tire will carry at a given inflation pressure. The "higher" the letter, the bigger the tire and so the greater the load capacity. The second letter, R, designates a radial construction. Load range replaces the ply-rating system. Load range B and load range D tires will carry the same load at the same pressure. Load range D tires may be inflated to higher pressures. At the higher pressures they will carry a greater load.

The first set of numbers (78) denotes the ratio of tire height to width. Height divided by width equals section ratio. For example an LR78 tire is 78 percent as high as it is wide. The lower the number, the wider the tire. The second set of numbers (15) shows the bead diameter of the tire.

A TPC SPEC. NO. (Tire Performance Criteria Specification Number) is molded into the sidewall of each radial tire next to the tire size designation. The TPC number indicates that the tire meets GM size and performance specifications for each specific model.

Replacement Tires

When replacing tires, only the size, load range, and construction type (bias, bias-belted, or radial) originally installed on the vehicle are recommended. Use of any other tire size or type tire may seriously affect ride, handling, speedometer/odometer calibration, vehicle ground clearance and tire clearance to the body and chassis. The following also should be considered when replacing tires:

- Because of possible adverse effects on vehicle handling, do not mix radial ply tires with other type tires on the same vehicle.
- It is recommended that new tires be installed at all positions or in pairs on the same axle.
- When replacing only one tire, it should be paired with the tire having the most tread, to equalize braking traction.

MAINTENANCE AND MINOR ADJUSTMENTS

Wheel Maintenance

Wheels must be replaced if they are bent, dented, have excessive lateral or radial runout, leak air through welds, have elongated bolt holes, if lug nuts won't stay tight, or if they are heavily rusted. Wheels with greater runout than shown in Fig. 10-1 may cause objectional vibrations.

Wheel repairs that use welding, heating, or peening are not approved. An inner tube is not an acceptable repair for leaky wheels or tires.

Wheel nuts must be tightened in sequence and to the specified torque range for proper attaching and to avoid bending wheel, brake drum or rotor, Fig. 10-2. For uniform torque results, the mounting sequence shown should be followed twice. First to firmly seat all nuts and a second time to achieve the recommended torque.

Inflation of Tires

Correct inflation pressure is an important item of tire care. The pressure recommended for any model is carefully calculated to give a satisfactory ride, stability, steering, tread wear, cord life and resistance to bruises.

- Tire pressure, with tires cold*, should be checked monthly or before any extended trips and set to specifications on the placard label.
- Valve caps or extensions should be on the valve to keep dust and water out.
- For continuous high speed operation (over 75 MPH) increase pressures 4 PSI up to maximum of 32 PSI cold, for load range B tires, and 40 PSI for D rated tires. (Sustained speeds above 75 MPH are not recommended when the 4 PSI adjustment would require pressures greater than maximum.)
- Tire pressures may increase as much as 6 PSI when hot.

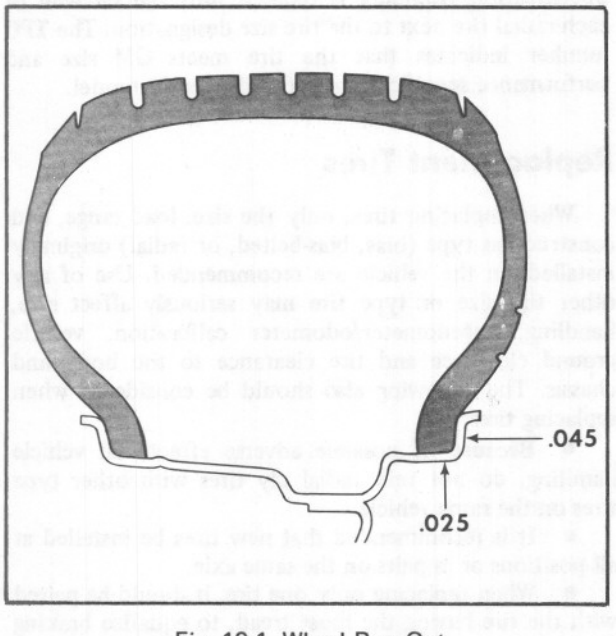


Fig. 10-1 Wheel Run Out

Higher Than Recommended Pressure Can Cause:

1. Hard ride.
2. Tire bruising or carcass damage.
3. Poor traction at rear wheels.
4. Rapid tread wear at center of tire.

- *After vehicle has set for 3 hours or more, or driven less than 1 mile.

Lower Than Recommended Pressure Can Cause:

1. Tire squeal on turns.
2. Higher effort steering.
3. Rapid and uneven wear on the edges of the tread.
4. Tire bruises from rim.
5. Tire cord breakage.
6. Tramp and shimmy.
7. High tire temperatures.
8. Decreased handling capability.
9. Decreased fuel economy.
10. Wheel rim impact damage.

Unequal Pressure On Same Axle Can Cause:

1. Uneven braking.
2. Steering lead.
3. Poor handling.
4. Swerve on acceleration.
5. Overheating of differential (drive axle).

Tire Rotation

To equalize wear, rotate radial tires according to Fig. 10-3. Do not use the X method as roughness and

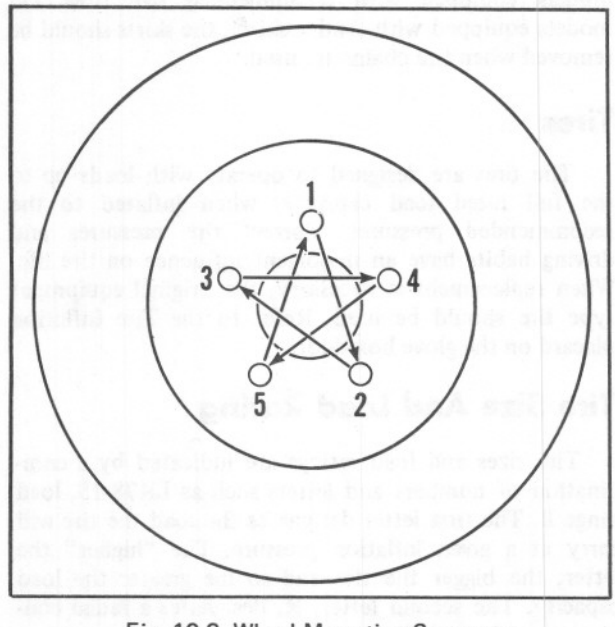


Fig. 10-2 Wheel Mounting Sequence

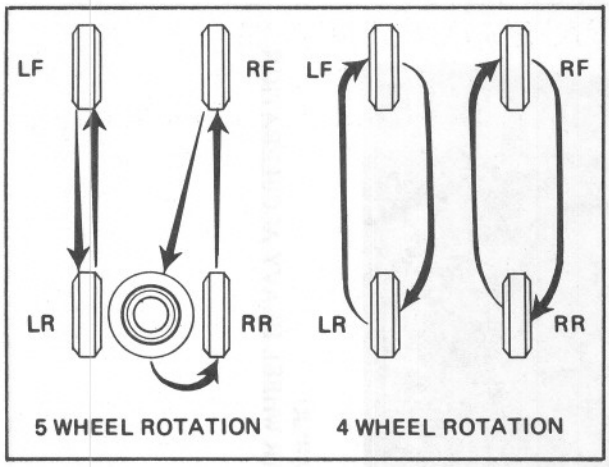


Fig. 10-3 Tire Rotation Diagram

irregular wear can result. Radial tires should be rotated at the first 7,500 miles and then at least every 15,000 miles.

Due to their design, radial tires tend to wear at a faster rate in the shoulder area, particularly in front positions. This makes regular rotation necessary.

There are two rotation plans; one for four tires and one for five tires. See rotation chart Fig. 10-3.

Unusual wear such as flat spots, cups, gouges, and wavy wear, Fig. 10-4, can be caused by loose or neglected suspension or tire balance.

The importance of regular rotation and an occasional alignment check cannot be over-emphasized.

(NOTE: Use 4 wheel rotation only when vehicle is equipped with a space saver spare.)

- HARD CORNERING
- UNDER INFLATION
- LACK OF ROTATION

- EXCESSIVE TOE
- CONSTRUCTION NON-UNIFORMITY

- CAMBER
- REAR WHEEL HEAVY ACCELERATION

Fig. 10-4 Tire Wear Diagnosis

REPAIR (TIRE)

Punctured tires should be removed from the wheel and permanently repaired from the inside. (Follow tire manufacturer's recommendations)

Punctures in the tread area up to 1/4" in diameter can be repaired, Fig. 10-5. A head type of plug repair is recommended as it not only patches the injury from the inside, but it also plugs the injury. An internal patch is also acceptable.

Externally applied plug type repairs are not recommended. But if used, should be considered temporary and the tire should be permanently repaired as soon as possible.

Never Repair a Tire With

- Ply separation.
- Broken or damaged bead wires.
- Loose cords.
- Tread separation.
- Cracks which extend into the tire fabric.
- Sidewall puncture.
- Tires with tread wear indicators showing.

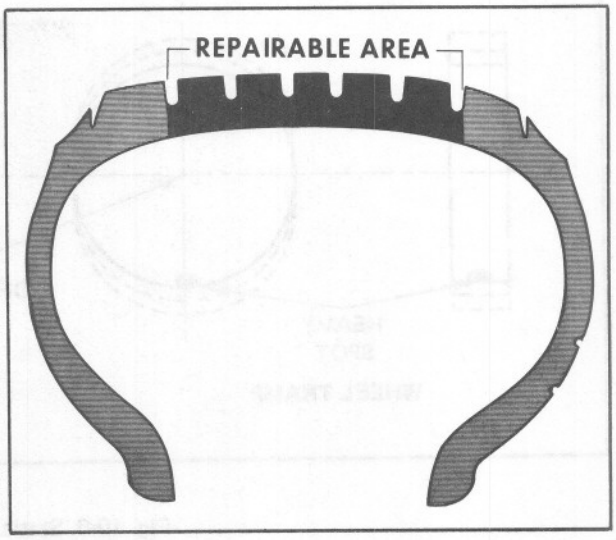


Fig. 10-5 Tire Repairable Area

SERVICE INFORMATION

Demounting And Mounting of Tubeless Tire

Use a tire changing machine to mount or demount tubeless tires. Follow the equipment manufacturer's instructions.

Rim bead seats should be cleaned with a wire brush or coarse steel wool to remove lubricants, old rubber, and light rust if evident.

(NOTE: Do not use hand tools or tire irons to change tires as they may damage the tire beads or wheel rim.)

WARNING: DO NOT STAND OVER TIRE WHEN INFLATING. BEAD WIRE MAY BREAK WHEN BEAD SNAPS OVER SAFETY HUMP AND CAUSE SERIOUS INJURY.

Inflate to 40 PSI, so that beads are completely seated.

WARNING: DO NOT EXCEED 40 PSI PRESSURE WHEN INFLATING. IF 40 PSI PRESSURE WILL NOT SEAT BEADS, DEFLATE, RELUBRICATE AND REINFLATE. OVERINFLATION MAY CAUSE THE BEAD WIRE TO BREAK AND CAUSE SERIOUS PERSONAL INJURY.

Install valve core and inflate to proper pressure. Check the locating rings of the tire to be sure they show around the rim flanges on both sides.

SPACE SAVER SPARE

It is recommended that repair or replacement of the Space Saver Spare tire be made only by the authorized tire dealer.

Balancing Wheels

There are two types of wheel and tire balance: static and dynamic. Static balance is the equal distribution of weight around the wheel. Wheels that are statically unbalanced cause a bouncing action called wheel tramp. This condition will eventually cause wear and damage to the tire. Fig. 10-6.

Dynamic balance is the equal distribution of weight on each side of the centerline so that when the tire spins, there is no tendency for the assembly to move from side to side. Wheels that are dynamically unbalanced may cause a vibration at any speed. Fig. 10-7.

General Balance Precautions

Deposits of mud, etc. must be cleaned from the inside of the rim. Stones should be pried from the tread in order to avoid operator injury during spin balancing and to obtain a good balance. The tire should be inspected for any damage, then balanced according to the equipment manufacturer's recommendation.

Recommended Balance Method

Off the car static and dynamic balance is recommended to maximize balance accuracy. Rotation

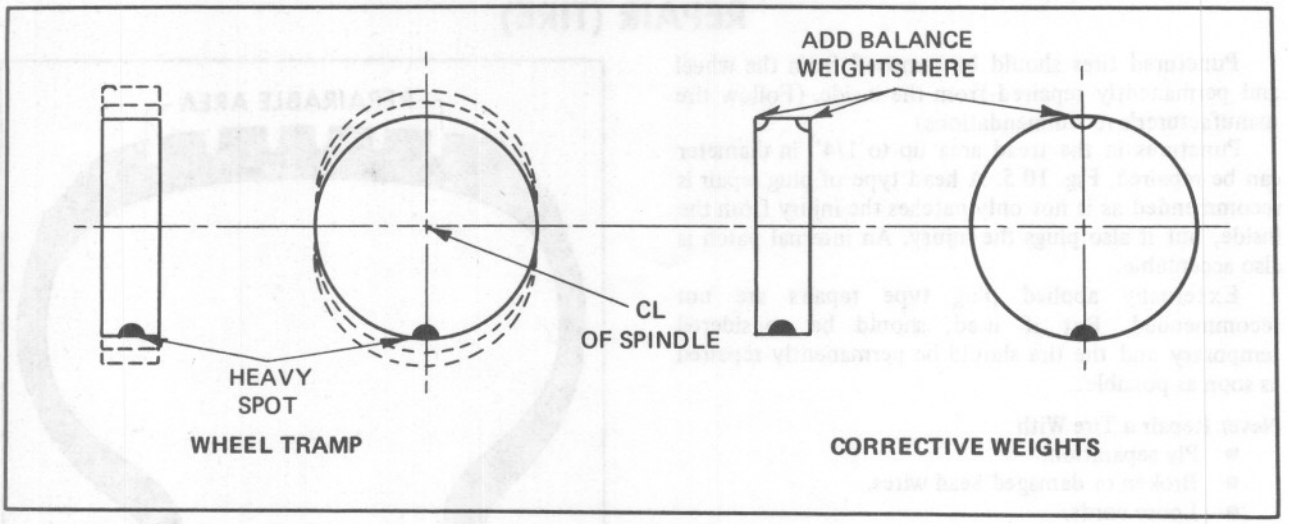


Fig. 10-6 Static Unbalance Correction

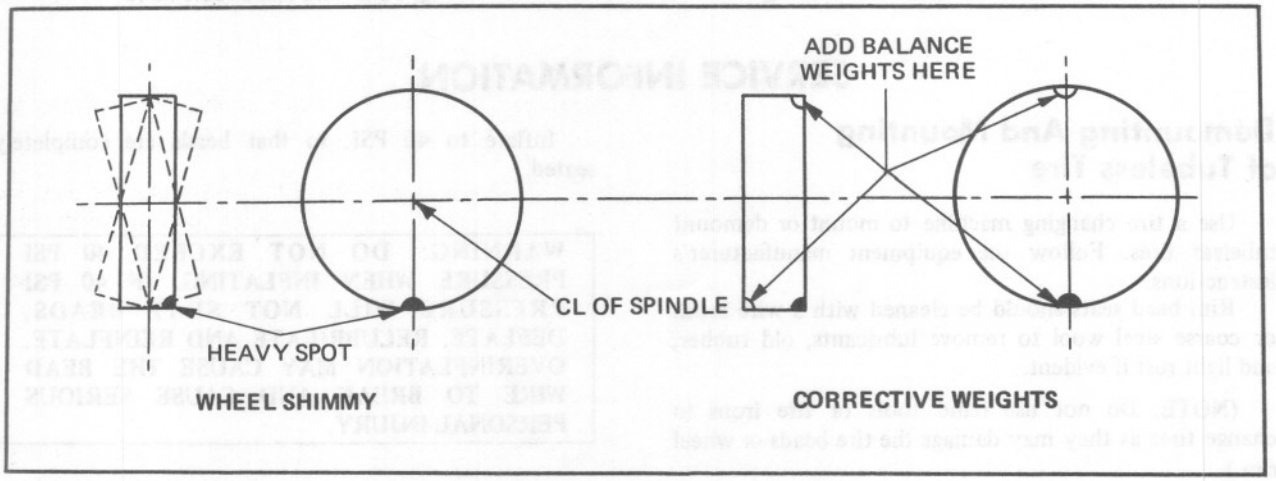


Fig. 10-7 Dynamic Unbalance Corrections (Weight placement illustrated for bead equipment correction method)

of tires without rebalance can be performed with this method without balance degradation.

Factory Balance Method and Specification

Cadillac "C" and "D" tire/wheel assemblies are statically balanced to a tolerance of 0.5 ounce at the rim. Correction weight is added to the inside rim up to 3.0 ounces and the remainder up to a total of 5.0 ounces to the outer rim.

Cadillac "E" tire/wheel assemblies are two-plane dynamically balanced to a tolerance of 0.5 ounce per rim. The factory balancing method does not place the dynamic weights equal and opposite as illustrated in the shop manual diagram. Therefore, if a balance problem is suspected it is necessary to check the factory balance accuracy on your shop equipment. The balance should also be accurate to a static balance tolerance of 0.5 ounce at the rim. Static correction weight should be split between the inner and outer rim flange to preserve the dynamic balance if required.

(NOTE: The factory uses precision equipment and considerable manpower to achieve balance specifications. Before removing factory weight, check balance accuracy, if necessary.)

On Car Kinetic Balance

WARNING: ON CARS THAT DO NOT HAVE A CONTROLLED DIFFERENTIAL, DRIVE WHEEL SPIN SHOULD BE LIMITED TO 35 MPH AS INDICATED ON THE SPEEDOMETER. THIS LIMIT IS NECESSARY BECAUSE THE SPEEDOMETER ONLY INDICATES ONE-HALF OF THE ACTUAL WHEEL SPEED WHEN ONE DRIVE WHEEL IS SPINNING AND THE OTHER DRIVE WHEEL IS STOPPED. UNLESS CARE IS TAKEN IN LIMITING DRIVE WHEEL SPIN, THE SPINNING WHEEL CAN REACH EXCESSIVE SPEEDS. THIS CAN RESULT IN POSSIBLE TIRE DISINTEGRATION OR DIFFERENTIAL FAILURE, WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR EXTENSIVE VEHICLE DAMAGE.

On cars equipped with a controlled differential, the following procedure should be used:

1. Raise both rear wheels with a jack under the differential. Put jack stands under axle as a safety measure, but do not put car weight on stands.

WARNING: DO NOT ATTEMPT TO BALANCE A TIRE ON A DRIVE WHEEL WITH THE OTHER DRIVE WHEEL ON THE GROUND. THE CAR MAY DRIVE THROUGH THIS WHEEL AND CAUSE THE VEHICLE TO MOVE UNEXPECTEDLY, RESULTING IN PERSONAL INJURY AND PROPERTY DAMAGE.

2. Remove one wheel.
3. Reinstall lug nuts and tighten securely to retain the brake drum.
4. Balance the remaining wheel using engine power to spin the wheel.

WARNING: ON CARS THAT HAVE A CONTROLLED DIFFERENTIAL DRIVE WHEEL SPIN SHOULD BE LIMITED TO 70 MPH. THIS IS TO PREVENT TIRE DISINTEGRATION RESULTING IN SERIOUS PERSONAL INJURY AND EXTENSIVE PROPERTY DAMAGE.

5. Reinstall the second wheel and balance.

"On car" balancing of Eldorado front wheel and tire assemblies require heavy duty equipment. Use set up

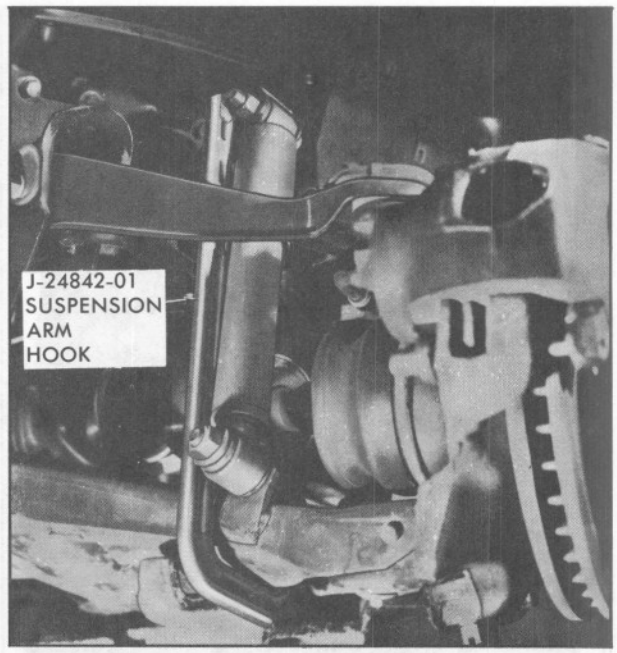


Fig. 10-8 Suspension Arm Hook

described in Figure 10-8 to keep suspension at normal standing height to avoid excitements from angulated joints in drive axles.

Suspension arm hook J-24842-01 must be installed on the Eldorado front suspension before balancing is attempted.

Fig. 10-8 shows the hook in the installed, on car position. The installation and removal procedures are as follows:

a. Installation

1. Open hood.
2. Reaching over fender position hook through upper control arm inboard of front shock abosrber, engaging lower end of hook into channel in lower control arm (as shown) below shock absorber lower mount.
3. Using your body weight on fender, engage top of hook in hole in top of upper shock absorber mount.

b. Removal

1. Using your body on fender, disengage top of hook from upper shock absorber mounting bracket hole.
2. Working hook downward, disengage hook at lower control arm and remove hook.
3. Close hood.

DIAGNOSIS

Irregular And Premature Wear

Irregular and premature wear has many causes. Some of them are: incorrect inflation pressures, lack of tire rotation, driving habits, improper alignment and tire wear.

If the following conditions are noted, rotation is in order:

- Front tire wear is different from rear.
- Uneven wear exists across the tread of any tire.
- Left front and right front tire wear is unequal.
- Left rear and right rear tire wear is unequal.
- There is cupping, flat spotting, etc.

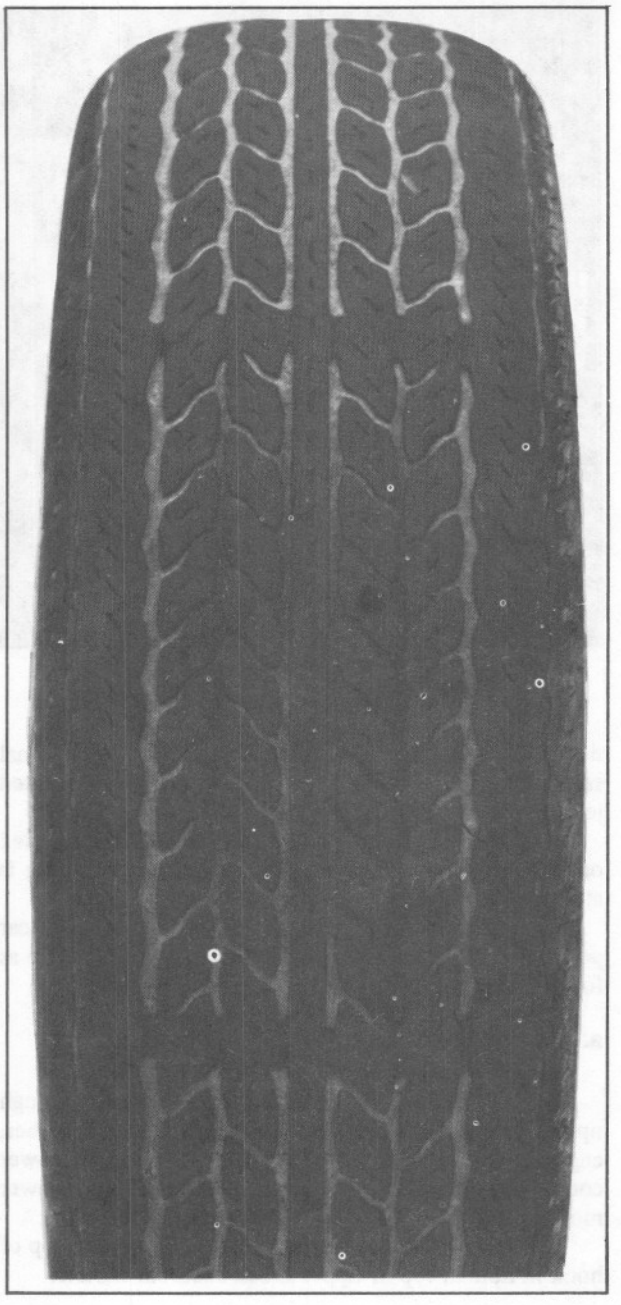


Fig. 10-9 Tread Wear Indicators

A wheel alignment check is in order if the following conditions are noted:

- Left front and right front tire wear is unequal.
- Wear is uneven across the tread of any front tire.
- Front tires' treads have scuffed appearance with "feather" edges on one side of tread ribs or blocks.

Wear Indicators

The original equipment tires have built-in tread wear indicators to show when tires need replacement. These indicators will appear as 1/2 inch wide bands when the tire tread depth becomes 1/16 of an inch. When the indicators appear in two or more adjacent grooves at three locations around the tire, or when cord or fabric is exposed, tire replacement due to tread wear is recommended.

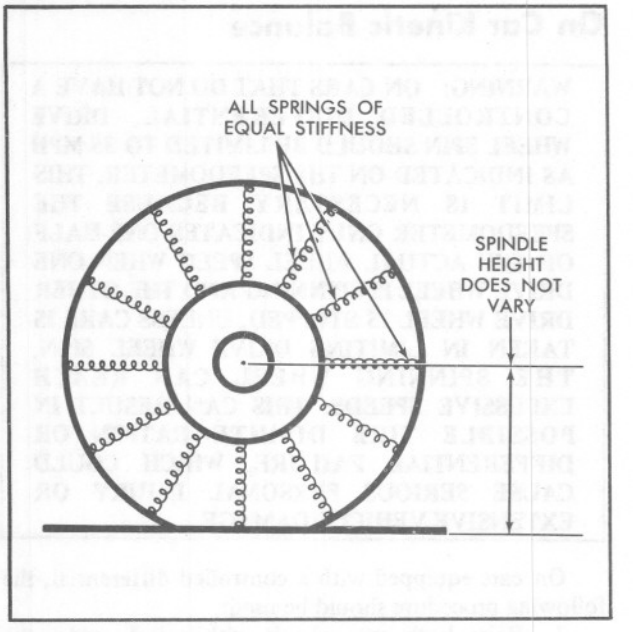


Fig. 10-10 Tire Roughness No. 1

Vibration

Correcting tire balance and radial force variation solves most car vibration problems. Wheel and tire out of balance causes the majority of highway speed vibrations, so balance should be checked first.

Radial Force Variation

For a tire-wheel assembly to cause car vibration, it must first cause movement in the spindle or axle of the

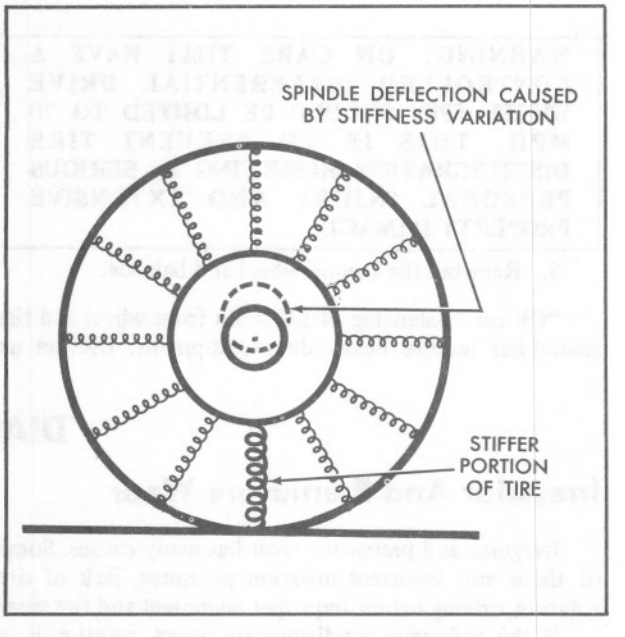


Fig. 10-11 Tire Roughness No. 2

car. The spindle or axle of a car must be moved before the car can "feel" a vibration.

Think of a "perfectly" round tire as a number of identical "springs", Fig. 10-10. As the tire and wheel rotate, each one of these springs contacts the road and flexes.

If the amount of flexing of each spring is uniform as the tire rolls over the smooth road surface, it does not cause the spindle to move. As long as all the springs have the same stiffness they will flex the same and the spindle will not be moved and thus the car will not "feel" any vibration.

If one of these springs is stiffer than the others, and the tire comes into contact with the road at this stiffer point, Fig. 10-11, the spindle will move upward because the stiffer spring does not "give" as much as the other springs in the tire.

LOADED RADIAL RUNOUT

As the tire revolves faster, this spindle movement speeds up. At highway speed, it matches the resonant frequency of most cars' suspension systems and causes a shake-type ride or car vibration.

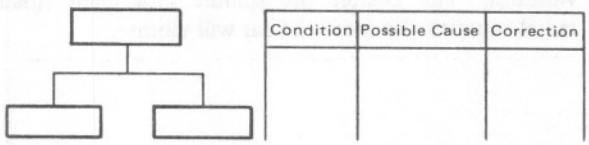
The difference in the stiffness of the tire is called tire "radial force variation" and is a cause of vehicle vibration. The greater the spindle movement (loaded radial runout), the more the car will vibrate.

DIAGNOSIS CHARTS

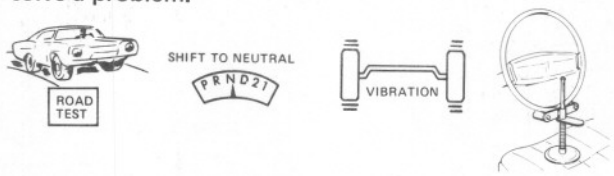
Using the TPD for RADIAL-LATERAL VIBRATION

Introduction

This section presents a systematic method of diagnosing and troubleshooting RADIAL–LATERAL VIBRATION. The charts you will be using are different from the ones you have used before. They aren't "go–no go" decision trees or tables.



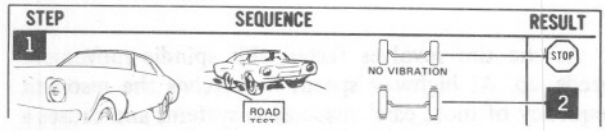
Instead the new diagnosis and troubleshooting charts use pictures plus a few words to help you solve a problem.



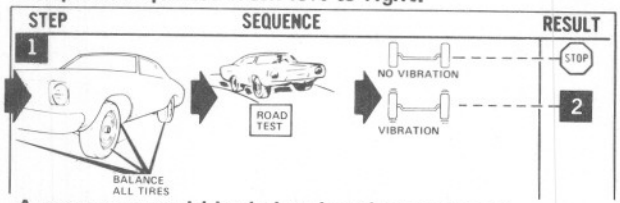
and symbols have replaced words.

Using the Charts

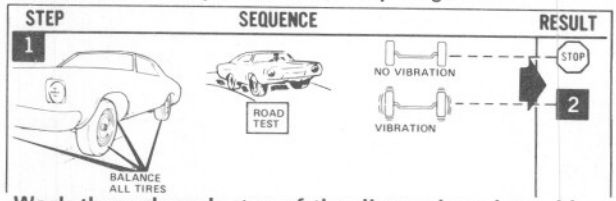
The charts are divided into three sections: step, sequence and result.



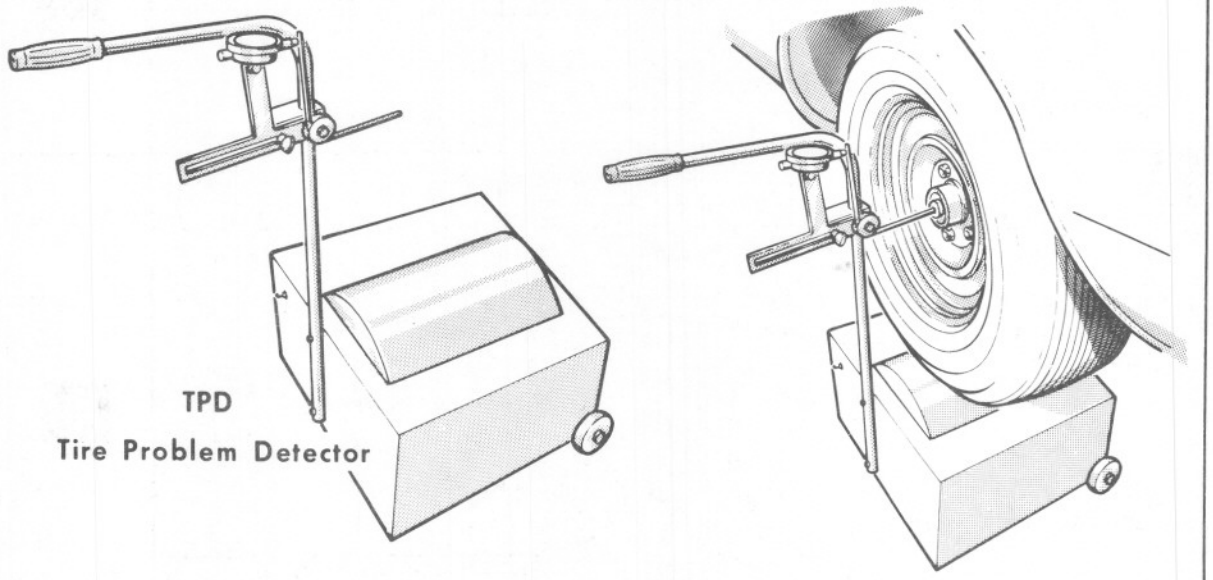
Always start at the first step and go through the complete sequence from left to right.



A sequence could be balancing tires and road testing for vibration. Each sequence ends with a result and tells you the next step to go to.

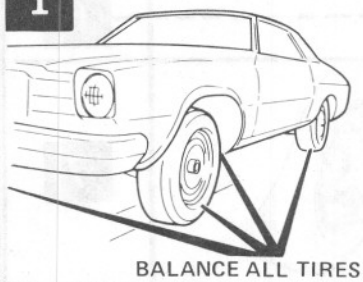
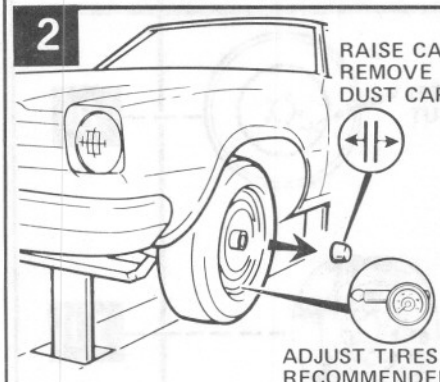
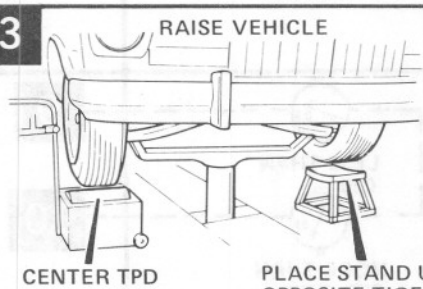
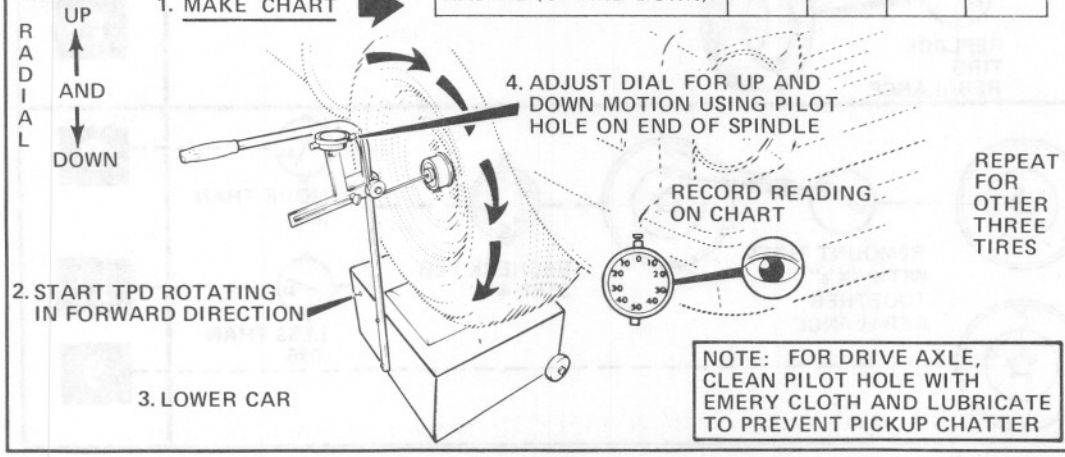


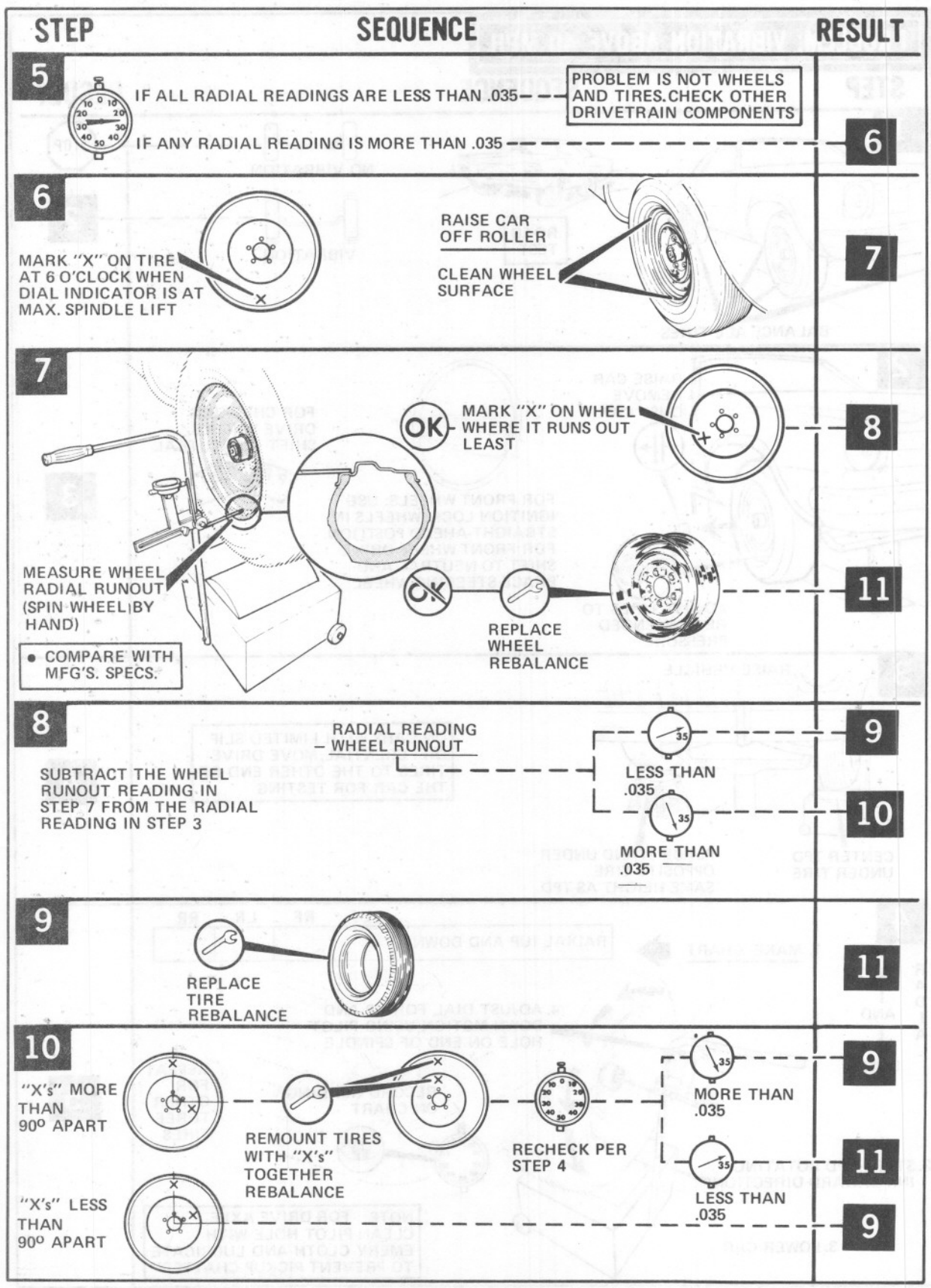
Work through each step of the diagnosis and troubleshooting charts till the system is repaired. STOP



If TPD is not available use SUBSTITUTION METHOD shown at back of charts

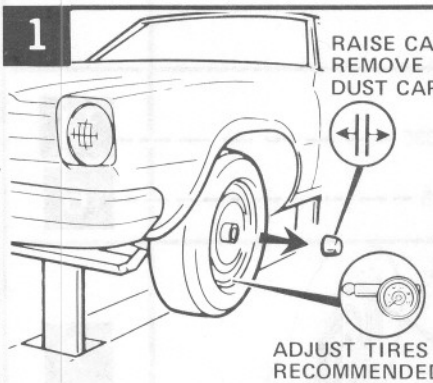
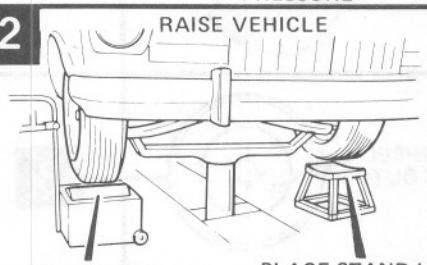
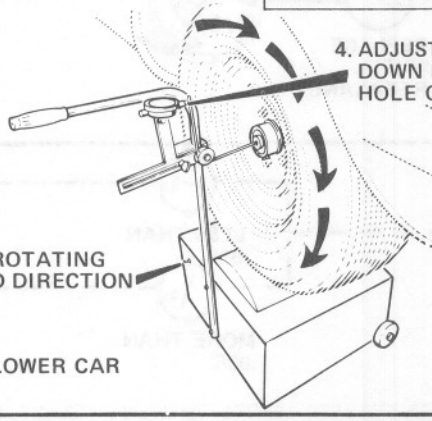
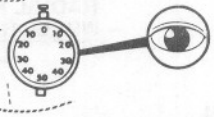
PROBLEM: VIBRATION ABOVE 40 MPH

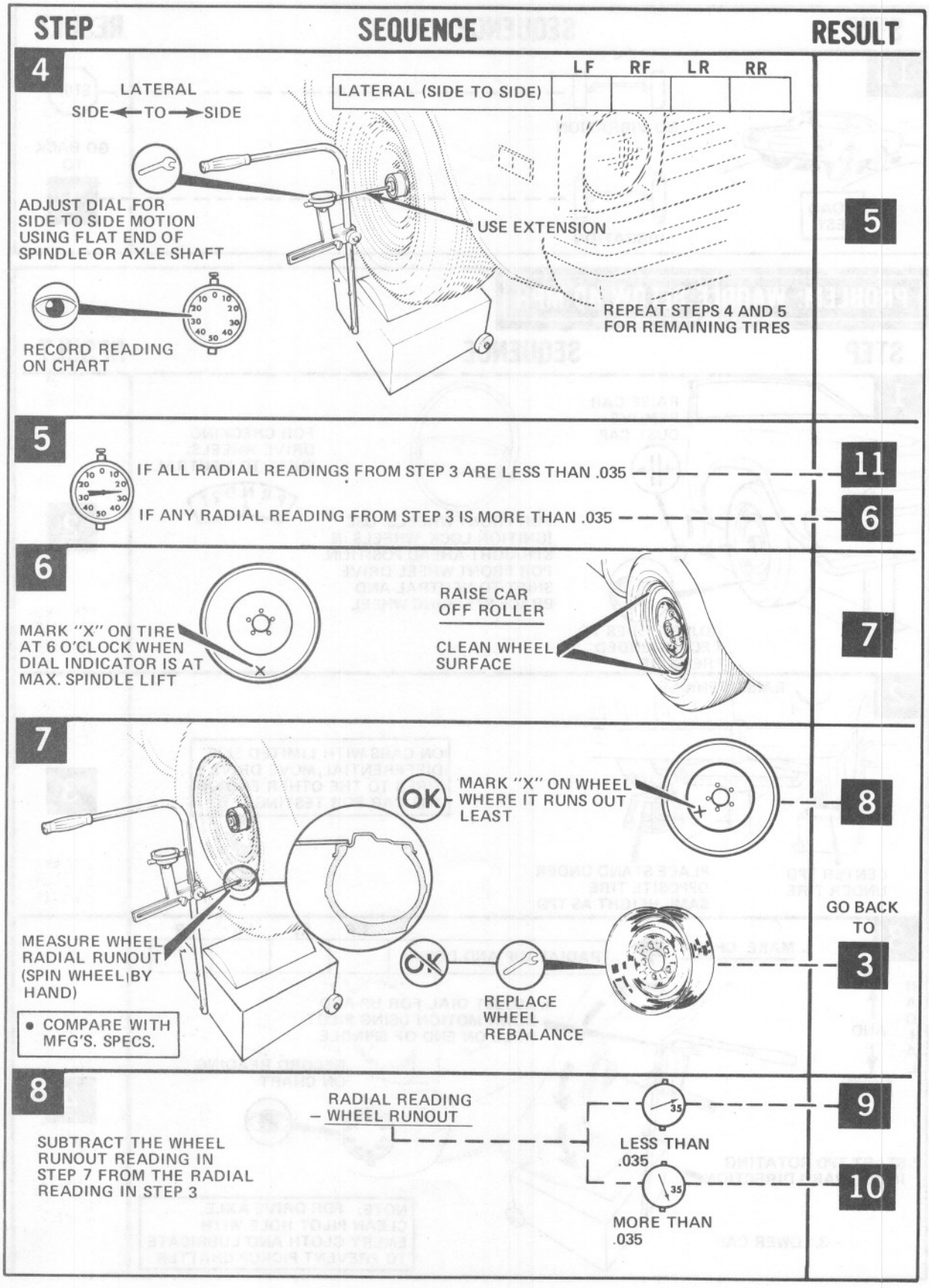
STEP	SEQUENCE	RESULT
1	 BALANCE ALL TIRES  ROAD TEST  NO VIBRATION  VIBRATION	STOP / 2
2	 RAISE CAR REMOVE DUST CAP ADJUST TIRES TO RECOMMENDED PRESSURE  FOR FRONT WHEELS: USE IGNITION LOCK. WHEELS IN STRAIGHT-AHEAD POSITION. FOR FRONT WHEEL DRIVE SHIFT TO NEUTRAL AND BRACE STEERING WHEEL  FOR CHECKING DRIVE WHEELS, SHIFT TO NEUTRAL	3
3	 RAISE VEHICLE CENTER TPD UNDER TIRE PLACE STAND UNDER OPPOSITE TIRE SAME HEIGHT AS TPD. ON CARS WITH LIMITED SLIP DIFFERENTIAL, MOVE DRIVE TIRES TO THE OTHER END OF THE CAR FOR TESTING	4
4	 1. MAKE CHART RADIAL UP AND DOWN LF RF LR RR RADIAL (UP AND DOWN) 2. START TPD ROTATING IN FORWARD DIRECTION 3. LOWER CAR 4. ADJUST DIAL FOR UP AND DOWN MOTION USING PILOT HOLE ON END OF SPINDLE RECORD READING ON CHART REPEAT FOR OTHER THREE TIRES NOTE: FOR DRIVE AXLE, CLEAN PILOT HOLE WITH EMERY CLOTH AND LUBRICATE TO PREVENT PICKUP CHATTER	5

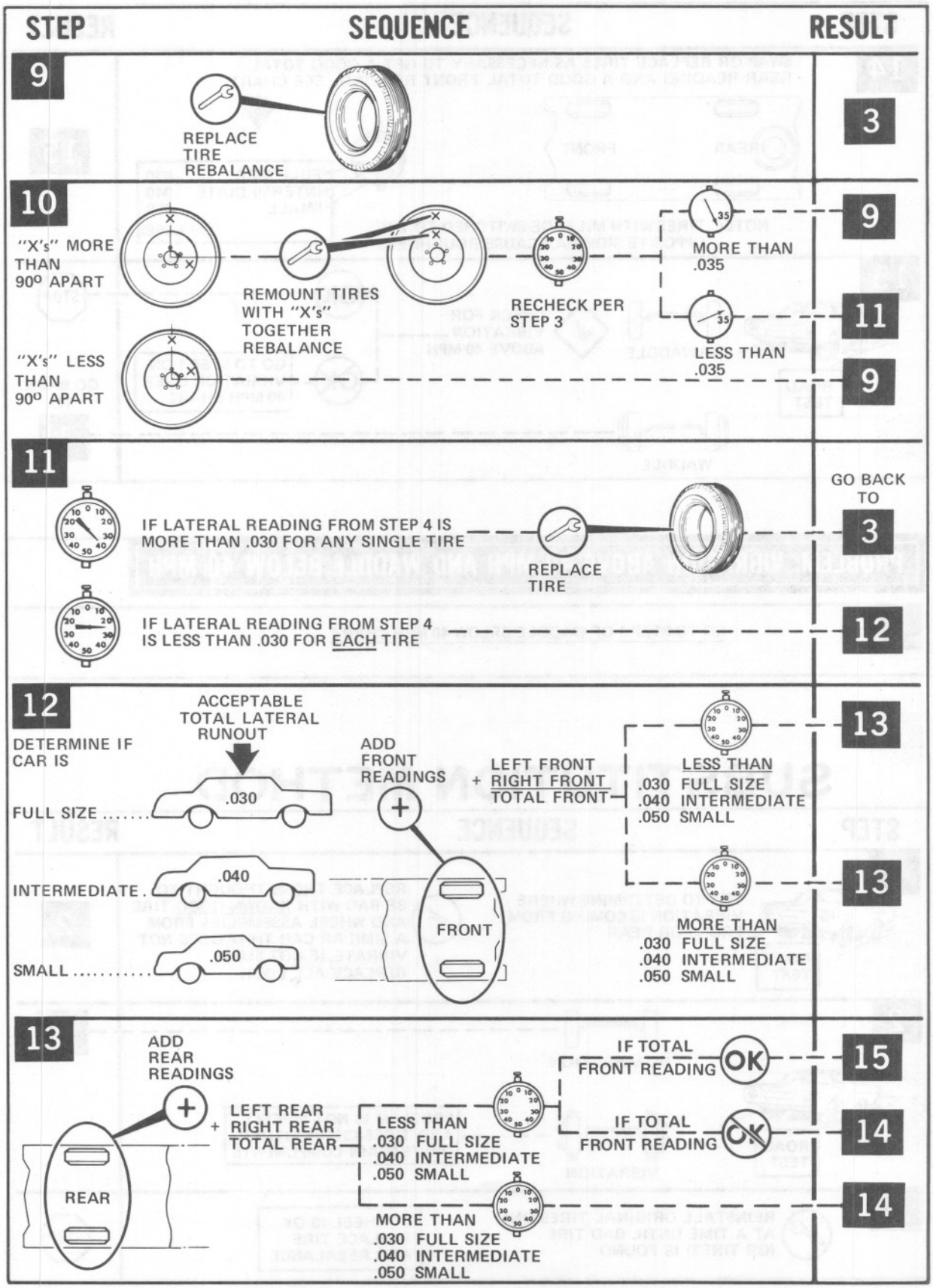

STEP
SEQUENCE
RESULT
5
IF ALL RADIAL READINGS ARE LESS THAN .035
PROBLEM IS NOT WHEELS AND TIRES. CHECK OTHER DRIVETRAIN COMPONENTS
IF ANY RADIAL READING IS MORE THAN .035
6
6
MARK "X" ON TIRE AT 6 O'CLOCK WHEN DIAL INDICATOR IS AT MAX. SPINDLE LIFT
RAISE CAR OFF ROLLER
CLEAN WHEEL SURFACE
7
7
MEASURE WHEEL RADIAL RUNOUT (SPIN WHEEL BY HAND)
• COMPARE WITH MFG'S. SPECS.
OK
MARK "X" ON WHEEL WHERE IT RUNS OUT LEAST
8
OK
REPLACE WHEEL REBALANCE
11
8
SUBTRACT THE WHEEL RUNOUT READING IN STEP 7 FROM THE RADIAL READING IN STEP 3
RADIAL READING – WHEEL RUNOUT
LESS THAN .035
9
MORE THAN .035
10
9
REPLACE TIRE REBALANCE
11
10
"X's" MORE THAN 90° APART
REMOUNT TIRES WITH "X's" TOGETHER REBALANCE
RECHECK PER STEP 4
MORE THAN .035
9
LESS THAN .035
11
"X's" LESS THAN 90° APART
9

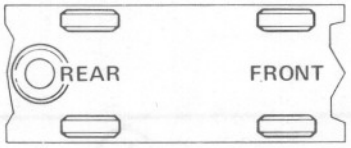
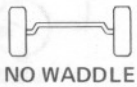
STEP	SEQUENCE	RESULT
11	 ROAD TEST NO VIBRATION VIBRATION	STOP GO BACK TO 1

PROBLEM: WADDLE BELOW 40 MPH

STEP	SEQUENCE	RESULT
1	 RAISE CAR REMOVE DUST CAP ADJUST TIRES TO RECOMMENDED PRESSURE  FOR FRONT WHEELS: USE IGNITION LOCK. WHEELS IN STRAIGHT-AHEAD POSITION. FOR FRONT WHEEL DRIVE SHIFT TO NEUTRAL AND BRACE STEERING WHEEL FOR CHECKING DRIVE WHEELS, SHIFT TO NEUTRAL 	2
2	 RAISE VEHICLE CENTER TPD UNDER TIRE PLACE STAND UNDER OPPOSITE TIRE SAME HEIGHT AS TPD. ON CARS WITH LIMITED SLIP DIFFERENTIAL, MOVE DRIVE TIRES TO THE OTHER END OF THE CAR FOR TESTING	3
3	1. MAKE CHART RADIAL (UP AND DOWN) | LF | RF | LR | RR | RADIAL UP AND DOWN  2. START TPD ROTATING IN FORWARD DIRECTION 3. LOWER CAR 4. ADJUST DIAL FOR UP AND DOWN MOTION USING PILOT HOLE ON END OF SPINDLE RECORD READING ON CHART  NOTE: FOR DRIVE AXLE, CLEAN PILOT HOLE WITH EMERY CLOTH AND LUBRICATE TO PREVENT PICKUP CHATTER	4


STEP
SEQUENCE
RESULT
4
LATERAL
SIDE ← TO → SIDE
LF RF LR RR
LATERAL (SIDE TO SIDE)
ADJUST DIAL FOR SIDE TO SIDE MOTION USING FLAT END OF SPINDLE OR AXLE SHAFT
USE EXTENSION
RECORD READING ON CHART
REPEAT STEPS 4 AND 5 FOR REMAINING TIRES
5
5
IF ALL RADIAL READINGS FROM STEP 3 ARE LESS THAN .035
11
IF ANY RADIAL READING FROM STEP 3 IS MORE THAN .035
6
6
MARK "X" ON TIRE AT 6 O'CLOCK WHEN DIAL INDICATOR IS AT MAX. SPINDLE LIFT
RAISE CAR OFF ROLLER
CLEAN WHEEL SURFACE
7
7
OK
MARK "X" ON WHEEL WHERE IT RUNS OUT LEAST
8
MEASURE WHEEL RADIAL RUNOUT (SPIN WHEEL BY HAND)
• COMPARE WITH MFG'S. SPECS.
OK
REPLACE WHEEL REBALANCE
GO BACK TO
3
8
RADIAL READING – WHEEL RUNOUT
SUBTRACT THE WHEEL RUNOUT READING IN STEP 7 FROM THE RADIAL READING IN STEP 3
LESS THAN .035
9
MORE THAN .035
10


STEP
SEQUENCE
RESULT
9
REPLACE TIRE REBALANCE
3
10
"X's" MORE THAN 90° APART
REMOUNT TIRES WITH "X's" TOGETHER REBALANCE
RECHECK PER STEP 3
MORE THAN .035
9
LESS THAN .035
11
"X's" LESS THAN 90° APART
9
11
IF LATERAL READING FROM STEP 4 IS MORE THAN .030 FOR ANY SINGLE TIRE
REPLACE TIRE
GO BACK TO
3
IF LATERAL READING FROM STEP 4 IS LESS THAN .030 FOR EACH TIRE
12
12
DETERMINE IF CAR IS
ACCEPTABLE TOTAL LATERAL RUNOUT
FULL SIZE .....
.030
INTERMEDIATE .
.040
SMALL .....
.050
ADD FRONT READINGS
+
FRONT
LEFT FRONT
+ RIGHT FRONT
TOTAL FRONT
LESS THAN
.030 FULL SIZE
.040 INTERMEDIATE
.050 SMALL
13
MORE THAN
.030 FULL SIZE
.040 INTERMEDIATE
.050 SMALL
13
13
ADD REAR READINGS
+
REAR
+ LEFT REAR
RIGHT REAR
TOTAL REAR
LESS THAN
.030 FULL SIZE
.040 INTERMEDIATE
.050 SMALL
IF TOTAL FRONT READING OK
15
IF TOTAL FRONT READING OK
14
MORE THAN
.030 FULL SIZE
.040 INTERMEDIATE
.050 SMALL
14

STEP	SEQUENCE	RESULT
14	SWAP OR REPLACE TIRES AS NECESSARY TO GET A GOOD TOTAL REAR READING AND A GOOD TOTAL FRONT READING. SEE CHART   FULL SIZE .030 INTERMEDIATE .040 SMALL .050 (OR LESS) NOTE: TIRES WITH MILEAGE SWITCHED TO THE OPPOSITE SIDE MAY CAUSE ROUGHNESS	15
15	 ROAD TEST  NO WADDLE  CHECK FOR VIBRATION ABOVE 40 MPH OK → STOP OK → GO TO STEP 1 ON VIBRATION OVER 40 MPH CHART  WADDLE → GO BACK TO 1	

PROBLEM: VIBRATION ABOVE 40 MPH AND WADDLE BELOW 40 MPH	
1	GO TO STEP 1 OF WADDLE BELOW 40 MPH CHART

SUBSTITUTION METHOD

STEP	SEQUENCE	RESULT
1	 ROAD TEST TRY TO DETERMINE WHERE VIBRATION IS COMING FROM, FRONT OR REAR  REPLACE THOSE THOUGHT TO BE BAD WITH KNOWN GOOD TIRE AND WHEEL ASSEMBLIES FROM A SIMILAR CAR THAT DOES NOT VIBRATE. IF NOT SURE, REPLACE ALL FOUR	2
2	 NO VIBRATION → 3  ROAD TEST  VIBRATION PROBLEM IS NOT WHEELS AND TIRES. CHECK OTHER DRIVETRAIN COMPONENTS	
3	 REINSTALL ORIGINAL TIRES ONE AT A TIME UNTIL BAD TIRE (OR TIRES) IS FOUND IF WHEEL IS OK REPLACE TIRE AND REBALANCE	STOP

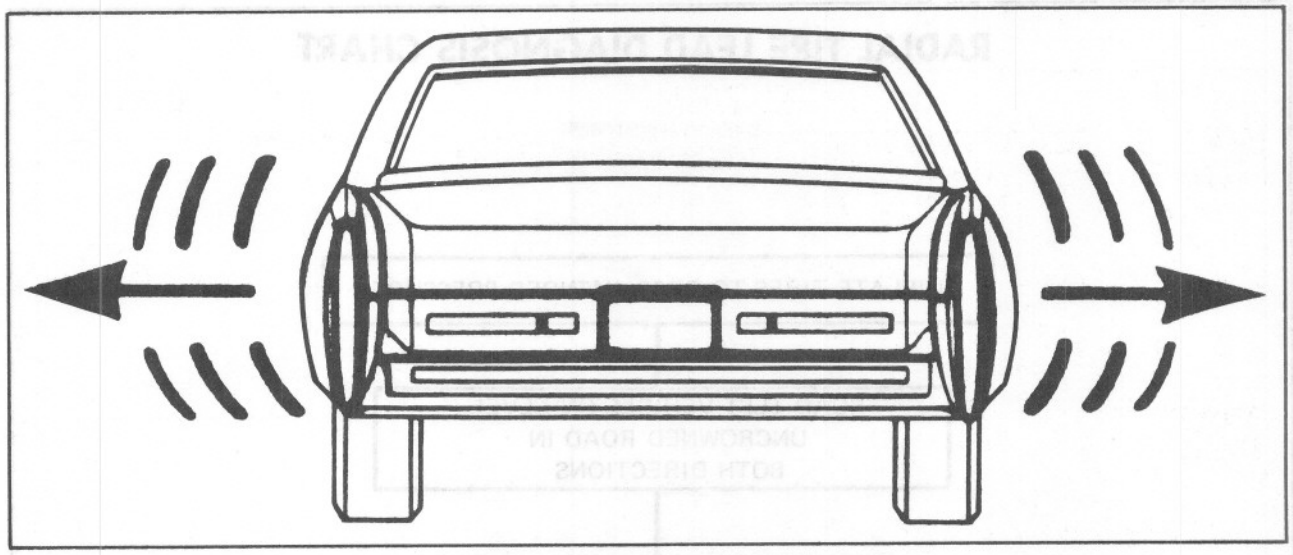


Fig. 10-12 Radial Tire Waddle

Lateral Force Variation (Radial Tire Waddle)

Complaint Description

Waddle is side to side movement at the front and/or rear of the car. Fig. 10-12. It is caused by lateral force variation in one or more of the radial tires. It is most noticeable at low speed, 5 to 30 MPH. It may also appear as a ride roughness at 50 to 70 MPH.

It is possible to road test a car and tell on which end of the car the objectionable tire is located. If the waddle tire is on the rear, the rear end of the car will shake from side to side or "waddle". From the driver's seat it feels as though someone is pushing on the side of the car.

If the objectionable tire is on the front, the waddle is more visual. The front sheet metal appears to be moving from side to side and the driver feels as though he is at the pivot point in the car.

LEAD

"Lead", is the deviation of the vehicle from a straight path on a level road with no corrective force on the steering wheel.

Lead is usually caused by these conditions: 1) alignment. 2) uneven brake adjustment, 3) tire construction and 4) uneven tire pressure. This section relates how to tell between tire lead and the need for alignment correction.

The way in which a tire is built can produce lead in a vehicle. An example of this is placement of the belt. Off center belts on radial tires can cause the tire to develop a side force (conicity) while rolling straight down the road. If one side of the tire is a little larger diameter than the other, the tire will tend to roll to one side. This develops a side force that can produce vehicle lead.

The procedure in Fig. 10-13 should be used to insure that front alignment is not mistaken for tire lead.

- Part of the lead diagnosis procedure is different from the proper tire rotation pattern currently in the Owners Manual. The Owners Manual recommends front to rear rotation only. If a medium to high mileage tire is moved to the other side of the car, be sure to check that rolling smoothness has been maintained.
- Rear tires will not cause lead. However, high conicity forces at the rear wheel positions can cause "dog-tracking."

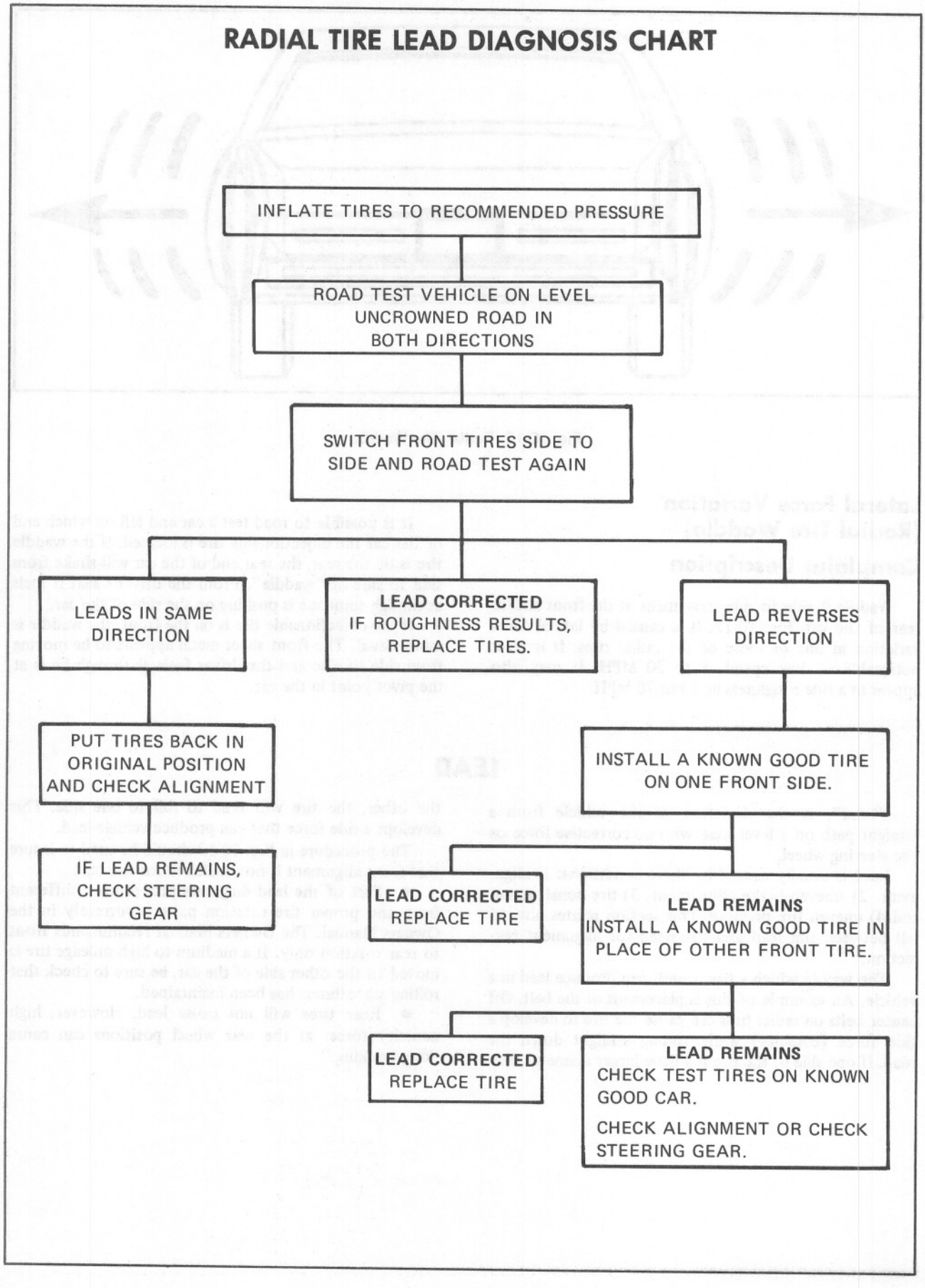


Fig. 10-13 Lead Diagnosis

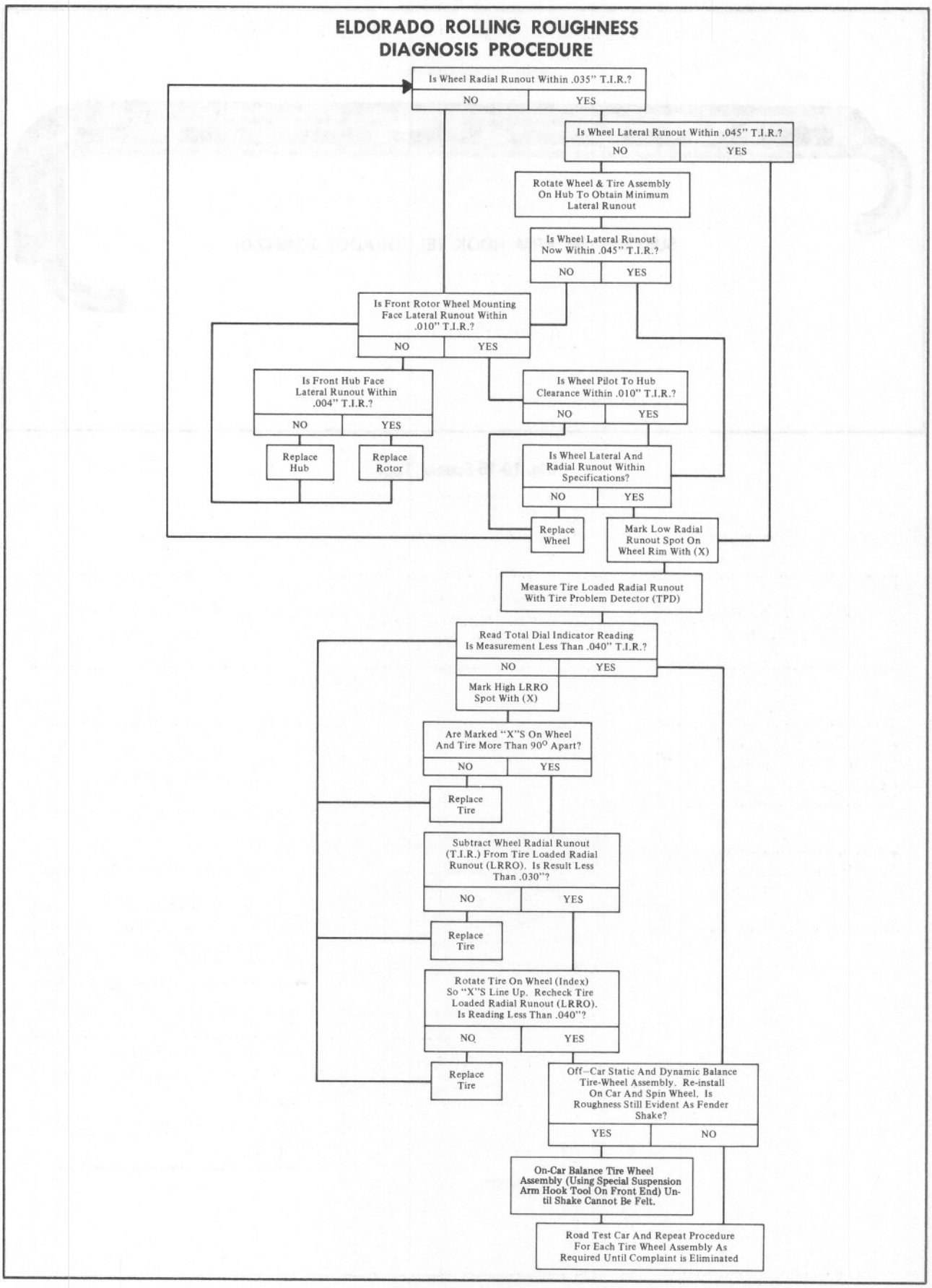


Fig. 10-14 Diagnosis Procedure

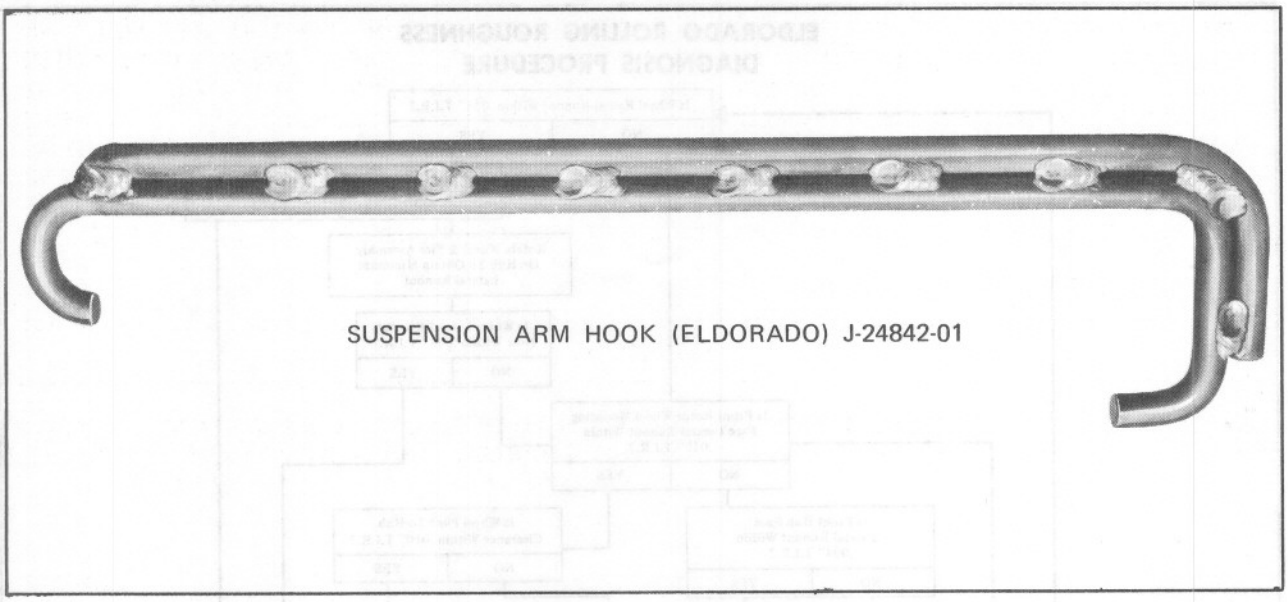


Fig. 10-15 Special Tool

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM, DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF ANY PORTION OF THE CHASSIS SHEET METAL WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF THE BUMPER IMPULSE DETECTOR UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS. IN ADDITION, CARE MUST BE EXERCISED TO NEVER BUMP OR STRIKE THE BUMPER IMPULSE DETECTOR IN A MANNER WHICH COULD CAUSE INADVERTENT DEPLOYMENT OR IMPROPER OPERATION OF THE SYSTEM.

A.C.R.S. DISCONNECTION PROCEDURE

1. Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

1. Front Fender (Right or Left) Except Eldorado

a. Removal (Fig. 11-1)

1. If left fender is to be removed, disconnect negative battery cable, and remove coolant reservoir. If right front fender is to be removed, remove the battery and the power antenna (Section 15.)

Note number of shims at each attaching location so that the same number are installed during installation.

2. Remove 4 bolts holding hood hinges to fenders, and remove hood.
3. Apply masking tape to rear edge of fender to avoid scratching finish when removing fender.
4. Raise front end of car and remove wheel on side of car from which fender is being removed.
5. Remove rocker panel molding.
6. Remove one screw and shims retaining fender to door at lower hinge pillar.
7. Remove one screw and shims that hold rear bottom of fender to rocker panel.
8. Remove five fender attaching screws from wheel opening edge of wheelhousing.
9. Remove four screws from inside top of wheelhousing.
10. Remove one screw from the rod securing radiator cradle to fender.
11. Remove one screw holding bumper dampening rod to fender.
12. Remove one screw holding front fender seal to lower bumper.
13. Remove cornering light (Section 12), and disconnect the fender marker lamp (Section 12).
14. Remove two screws holding fender to radiator cradle.
15. Remove 3 screws and shims that hold fender to cowl.

(NOTE: When removing left front fender, disconnect underhood wiring harness from retaining straps on fender.)

16. Remove fender by lifting outward and slightly forward.

b. Installation (Fig. 11-1)

All fender attaching bolts should be loosely installed until fender alignment is obtained. Install the same number of shims at each location as were removed. Then tighten to proper torque specification. Loosen wheelhousing attaching screws if necessary to align fender properly.

1. Position fender in approximate location, being careful not to damage leading edge of door or trailing edge of fender, and if working on left front fender, position underhood wiring harness and hood latch cable to fender reinforcement and secure.
2. Install two screws holding fender to radiator cradle.
3. Install three screws that hold fender to cowl.
4. Connect and install fender marker lamp and cornering lamp (Section 12).
5. Install screw holding front fender seal to lower bumper.
6. Install one screw holding bumper dampening rod to fender.
7. Install screw in the rod securing radiator cradle to fender.
8. Install four screws on inside top of wheelhousing.
9. Install five fender attaching screws in wheel opening edge of wheelhousing.
10. Install screw that holds rear bottom of fender to rocker panel.
11. Install screw retaining fender to door at lower hinge pillar.
12. Obtain proper alignment of fender and tighten all screws installed in steps 2 through 11 to proper torque.
13. Position hood and install four bolts holding hood hinges to fenders.
14. Install wheel and rocker panel molding.
15. Install or connect power antenna and battery as required.

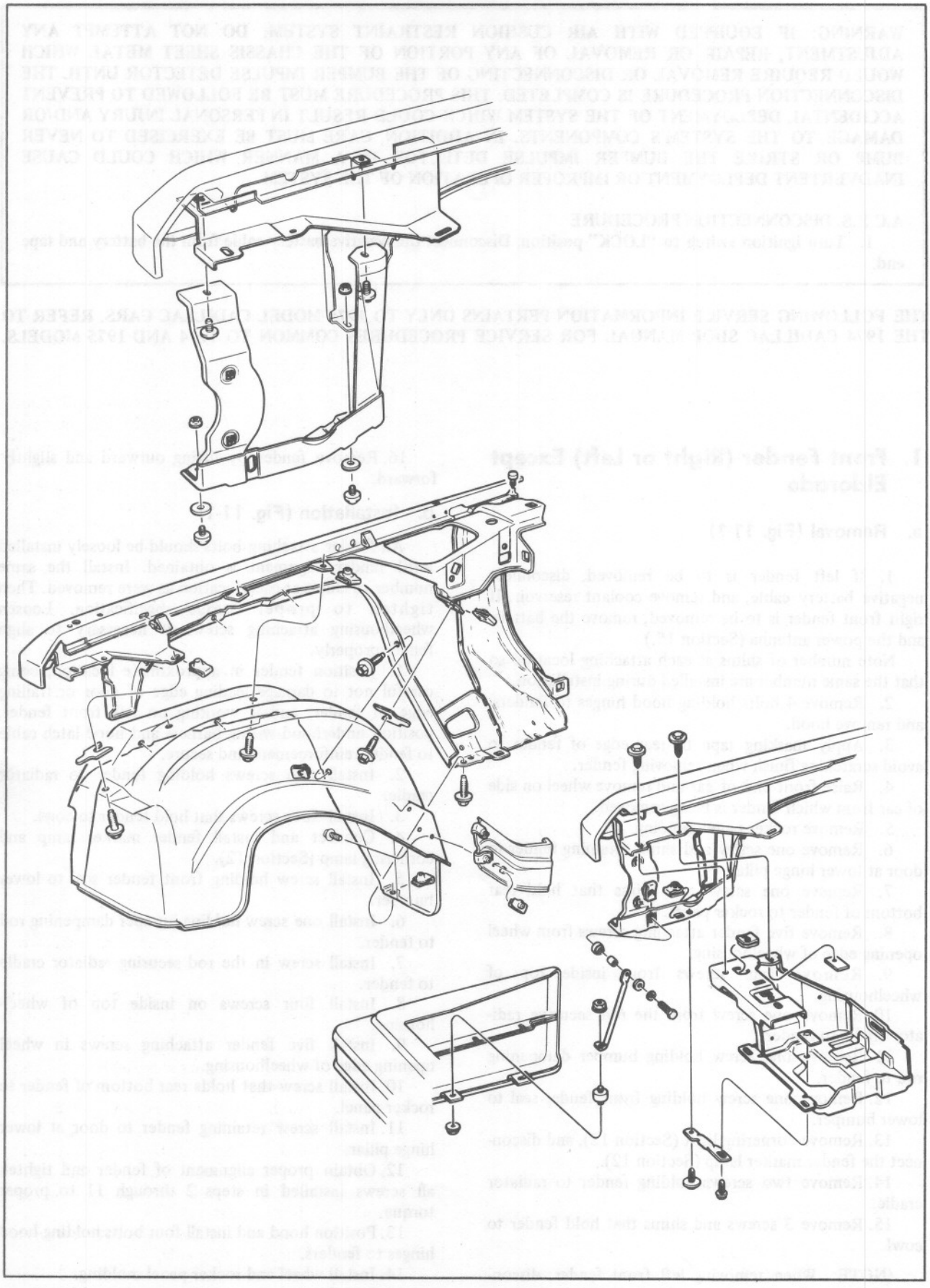


Fig. 11-1 Front Fender Disassembled (Except Eldorado)

2. Front Fender Wheelhousing (Right or Left) except Eldorado (Fig. 11-1)

a. Removal

1. Remove front fender as described in Note 1.
2. If working on left side, remove horn from wheelhousing. When removing right wheelhousing, proceed as follows:
   a. Remove Automatic Level Control compressor as described in Section 4.
   b. Remove heater and air conditioner hoses from wheelhousing.
   c. Remove battery cable from retaining straps.
   d. Remove power antenna as in Section 15.
3. Remove two screws and washers securing wheelhousing splash shield to frame.
4. Remove three screws with washers attached at rear of wheelhousing that secure brace to wheelhousing.
5. Remove two screws and tapping plate from brace that secures the front of wheelhousing to cradle.
6. Remove two nuts and washers that secure cowl-to-wheelhousing strut and wheelhousing-to-radiator cover strut to top of wheelhousing. Swing struts out of way.
7. Remove wheelhousing.

b. Installation

1. Position wheelhousing in approximate location and loosely install three screws at rear of wheelhousing that secure rear brace to wheelhousing.
2. Loosely install two nuts and washers on cowl-to-wheelhousing strut. Secure wheelhousing-to-radiator cover strut with one of two nuts.
3. Loosely install two screws and tapping plates securing front of wheelhousing to bracket at radiator cradle mount.
4. If right wheelhousing is being installed, proceed as follows:
   a. Install Automatic Level Control compressor as described in Section 4.
   b. Position and secure heater and air conditioning hoses to wheelhousing.
   c. Secure negative battery cable to wheelhousing with two straps.
   d. Install power antenna.
5. Install two screws and washers securing wheelhousing splash shield to frame.
6. Check alignment of wheelhousing and tighten all attaching nuts, bolts, and screws.
7. If working on left side, install horn.
8. Install front fender as described in Note 1B.

3. Front Fender (Right or Left) Eldorado

a. Removal (Fig. 11-2)

1. If left fender is to be removed, disconnect negative battery cable and remove hood. If right fender is to be removed, remove coolant reservoir, battery, power antenna, automatic level control compressor, and hood.

(NOTE: Count number of shims at each attachment so that same number are installed during installation.)

2. Apply masking tape to rear edge of fender to avoid scratching finish when removing fender.
3. Raise front of car and remove wheel at fender being replaced.

(NOTE: When removing left front fender, disconnect forward lamp harness from retaining straps on fender reinforcement.)

4. Disconnect wiring connector for parking, turn signal, cornering and side marker lamps. Also remove monitor conductors from headlamp connectors.
5. Remove fender extension. Note 5A.
6. Open door and remove one screw and shims securing lower rear edge of fender inside door opening.
7. Remove seven screws securing rocker panel molding to body and remove molding.
8. Remove one screw, washers and shims securing bottom rear edge of fender to rocker panel.
9. Remove one screw and washer securing lower rear corner of wheelhousing to rocker panel.
10. Remove one screw from front wheelhousing splash shield to fender.
11. Remove three screws, washers and shims securing top rear of fender to cowl under hood.
12. Remove one screw securing fender bracket to side of the radiator cradle.
13. Remove two screws securing top front of fender to radiator cradle.
14. Remove one bolt securing front lower corner of fender to radiator cradle strut rod.
15. Remove six screws securing fender to wheelhousing.
16. Remove two screws securing fender to top of wheelhousing.
17. Remove front fender.

b. Installation (Fig. 11-2)

1. Position fender on car and loosely install two screws securing fender to top of wheelhousing.

(NOTE: When installing left fender make sure wiring harness and hood release cable are routed between fender and wheelhousing.)

2. Loosely install two screws securing fender to top of wheelhousing.
3. Loosely install six screws securing fender to bottom of wheelhousing.
4. Loosely install one bolt and U-nut securing front lower corner of fender to radiator cradle strut rod.
5. Loosely install one screw securing front wheelhousing splash shield to fender.
6. Loosely install one screw securing fender to bracket on side of the radiator cradle.
7. Loosely install three screws, washers and shims securing top rear of fender to cowl under hood.
8. Loosely install one screw and washer securing

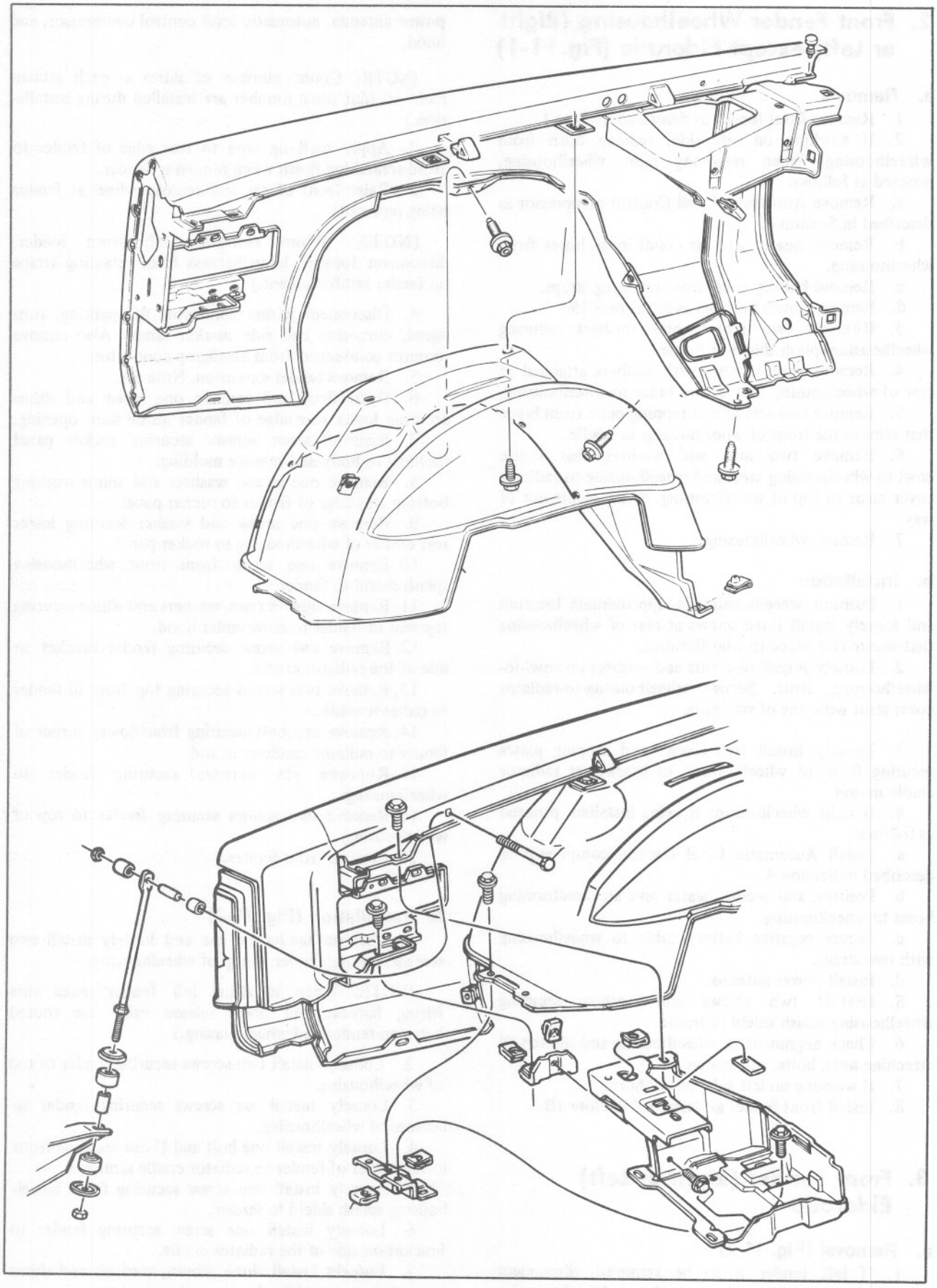


Fig. 11-2 Front Fender Disassembled – Eldorado

lower rear corner of wheelhousing to rocker panel.

9. Loosely install one screw securing lower rear corner of fender to rocker panel.

10. Loosely install one screw and shims securing lower rear edge of fender inside door opening.

11. Check alignment and tighten all screws to proper torque.

12. Position rocker panel molding to body and secure with seven screws.

13. Install fender extension. Note 5b.

14. Position and connect wiring connector for parking, turn signal, cornering, and side marker lamps. Also, install monitor conductors into headlamp connectors.

(NOTE: If installing left front fender, connect underhood wiring harness to retaining straps on fender reinforcement.)

15. With front end of car still raised, install wheel previously removed.

16. Remove masking tape from rear edge of fender.

17. If left fender was removed install negative battery cable and hood. If right fender was removed install battery, power antenna, automatic level control compressor, and hood.

4. Front Fender Wheelhousing (Right or Left) Eldorado (Fig. 11-2)

a. Removal

1. Remove fender as described in Note 3.
2. If working on left side, remove horn from wheelhousing. If removing right wheelhousing, remove heater and A/C hoses from clip on wheelhousing and support and position hoses out of way.
3. Remove two screws securing forward portion of wheelhousing to bracket on radiator cradle.
4. Remove one screw from rear wheelhousing splash shield to frame.
5. Remove wheelhousing from car.

b. Installation

1. Position wheelhousing in approximate location.
2. Install one screw securing rear wheelhousing splash shield to frame.

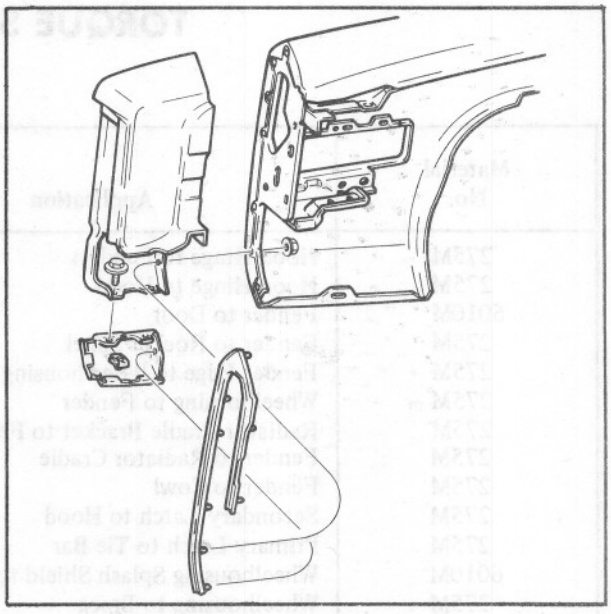


Fig. 11-3 Fender Extension

3. Install two screws and tapping plates securing forward portion of wheelhousing to bracket on radiator cradle.
4. If working on left side, position horn to wheelhousing and secure with fastener. If installing right wheelhousing, position heater and A/C hoses beneath clip on side of wheelhousing.
5. Install fender as described in Note 3b.

5. Fender Extension (Right or Left) Eldorado (Fig. 11-3)

a. Removal

1. Remove side marker light (Section 12).
2. Remove nine nuts securing fender extension to fender.
3. Pull fender extension forward and up to remove.

b. Installation

1. Position fender extension to fender.
2. Install nine nuts securing fender extension to fender.
3. Install side marker light (Section 12).

TORQUE SPECIFICATIONS

Material No.	Application	Size	Foot Pounds
275M	Hood Hinge to Fenders	3/8-16	30
275M	Hood Hinge to Hood	3/8-16	30
6010M	Fender to Door	3/8-16	30
275M	Fender to Rocker Panel	3/8-16	20
275M	Fender Edge to Wheelhousing	5/16-18	20
275M	Wheelhousing to Fender	5/16-18	20
275M	Radiator Cradle Bracket to Fender	5/16-18	15
275M	Fender to Radiator Cradle	5/16-18	15
275M	Fender to Cowl	3/8-16	30
275M	Secondary Latch to Hood	5/16-18	20
275M	Primary Latch to Tie Bar	5/16-18	20
6010M	Wheelhousing Splash Shield to Frame	5/16-12	10
275M	Wheelhousing to Brace	5/16-18	20
275M	Wheelhousing to Cradle	5/16-18	15
286M	Strut to Wheelhousing Nut	5/16-18	20
284M	Fender Extension to Fender	10-24	25 in. lbs.
6010M	Fender Seal to Bumper	1/4-14	15 in. lbs.
Eldorado			
275M	Fender to Cradle Strut Rod	5/16-18	15
275M	Wheelhousing to Fender	5/16-18	20

CAUTION: These hood latch assembly fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with equivalent parts if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.

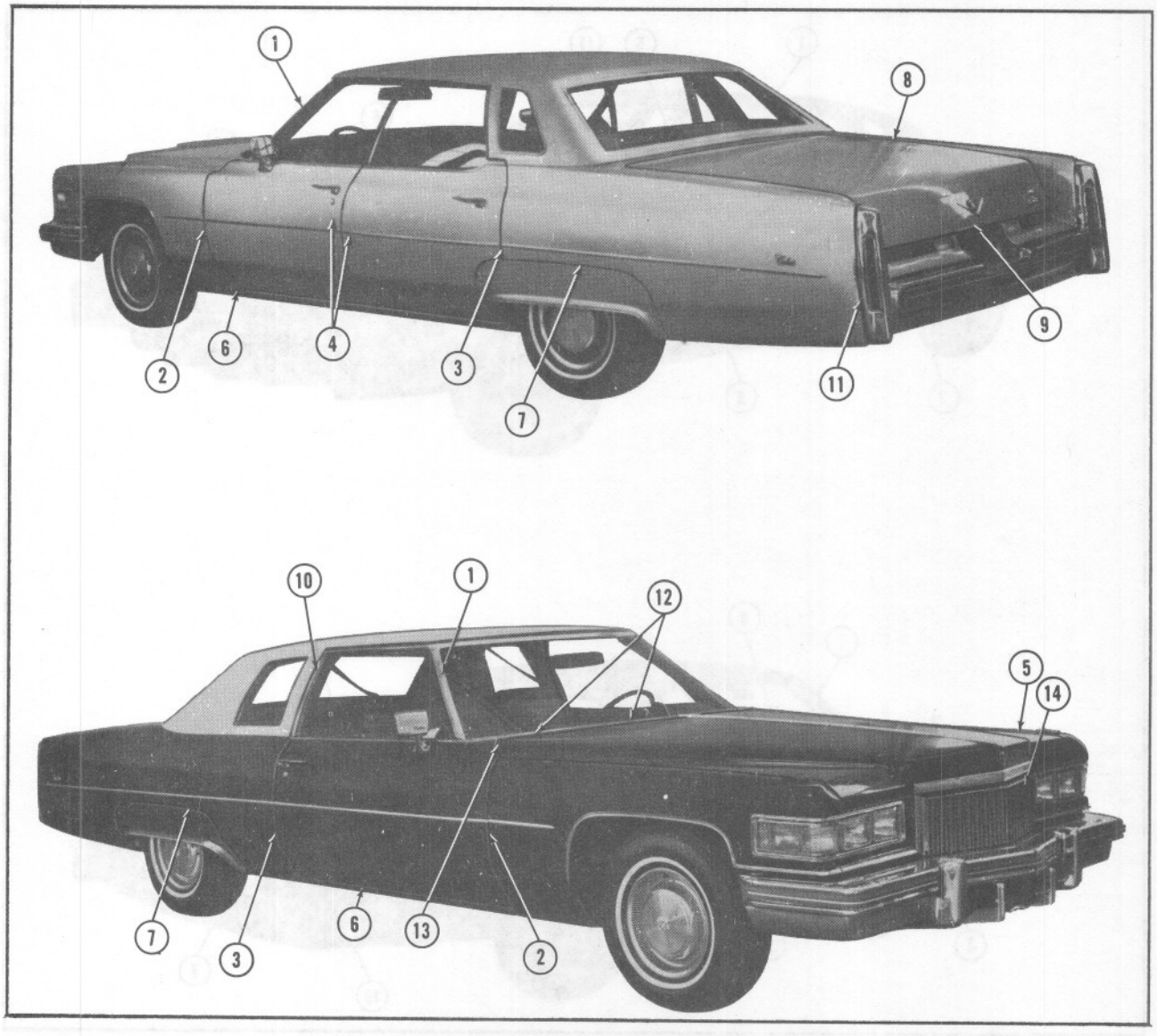


Fig. 11-4 Sheet Metal Tolerances (Except Eldorado)

SHEET METAL TOLERANCES (EXCEPT ELDORADO)

Location	Style	Clearance Gap"	Flushness
1. Side window to windshield	All except	3/8-7/16	—
	23 and 33	1/8-1/4	—
2. Door to Fender	All	7/32-9/32	3/32 +.00
3. Door to Quarter Panel	All	1/8-1/4	+0-1/16
4. Front Door to Rear Door	All	1/8-1/4	+0-1/16
5. Hood to Fender	All	1/8-5/32	±1/16
6. Door to Rocker Panel	All	1/8-1/4	—
7. Wheel Skirt to Quarter Panel	All	1/8-1/4	±1/16
8. Trunk Lid to Fender	All	1/16-1/4	±1/16
9. Trunk Lid to Bumper	All	1/2-3/4	—
10. Windows	49, 47 & 67 only	5/16-3/8	*
11. Bumper to Quarter Panel	All	1-23/32-1-31/32	—
12. Hood to Windshield Wiper Arm	All	1/8 Min.	—
13. Hood to Door	All	7/32-9/32	±1/16
14. Hood to Grille	All	19/32-3/4	—

*May be out of plane if weatherstrip provides watertight seal.

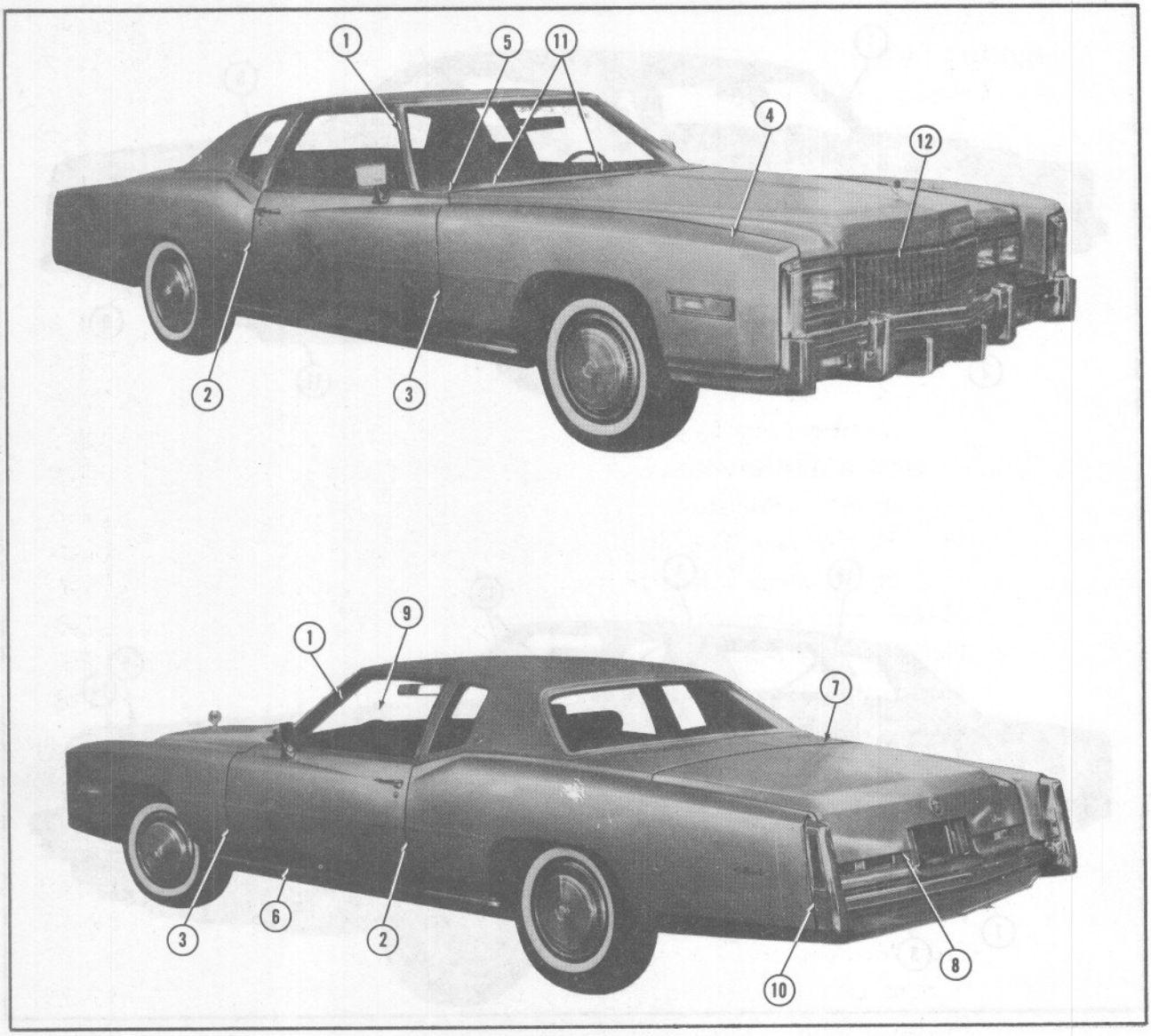


Fig. 11-5 Sheet Metal Tolerances—Eldorado

SHEET METAL TOLERANCES — ELDORADO

Location	Tolerance"	Flushness
1. Side window to windshield	3/8-7/16	—
2. Door to Quarter Panel	7/32-9/32	± 1/16
3. Door to Fender	7/32-9/32	± 1/16
4. Fender to Hood Panel Rear Extension	1/8-1/4	± 1/16
5. Hood to Door Hood Panel Rear Extension	7/32-9/32	± 1/16
6. Door to Rocker Panel	1/8-1/4	—
7. Trunk lid to Fender	1/16-1/4	± 1/16
8. Trunk lid to Bumper	1/2-3/4	—
9. Windows	5/16-3/8	*
10. Rear Bumper to Fender	1-23/32-1-31/32	—
11. Hood to Windshield Wiper Arm	1/8 Min.	—
12. Hood to Grille	19/32-3/4	—

*May be out of plane if weatherstrip provides watertight seal.

TABLE OF CONTENTS

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM DO NOT ATTEMPT ANY ADJUSTMENT REPAIR OR REMOVAL OF ANY PORTION OF THE ELECTRICAL SYSTEM WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF ANY COMPONENT OF THE AIR CUSHION RESTRAINT SYSTEM UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS.

A.C.R.S. DISCONNECTION PROCEDURE

Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

GENERAL DESCRIPTION

Headlamps

All Cadillacs feature the four lamp rectangular headlamp system. The rectangular headlamps are approximately six and three-eights inches wide by four inches high.

The rectangular shape offers a distinctive appearance. The lower height allows the possibility of a smaller overall frontal area. This is accomplished with no reduction in total headlamp candlepower output.

Mechanical aiming of the headlamps must be done with J-25300 headlamp aiming tool, Fig. 12-1. Aimers J-25300-1 and J-25300-2 when used with the two J-25300-6 adapters eliminate the need for a separate transit and target. When used with adapters J-25300-3 the aimers can be used to adjust the rectangular headlamps. Adapters J-25300-5 or J-25300-4 can easily be attached to the aimers to allow the tool to be used on five inch and seven inch round headlamps respectively.

Wiring

Chassis wiring is modified to include two twenty-eight pin bulkhead connectors. One is located on the back of the fuse panel as in prior models. The second bulkhead connector is located on the center of the firewall behind the air conditioning and heater case

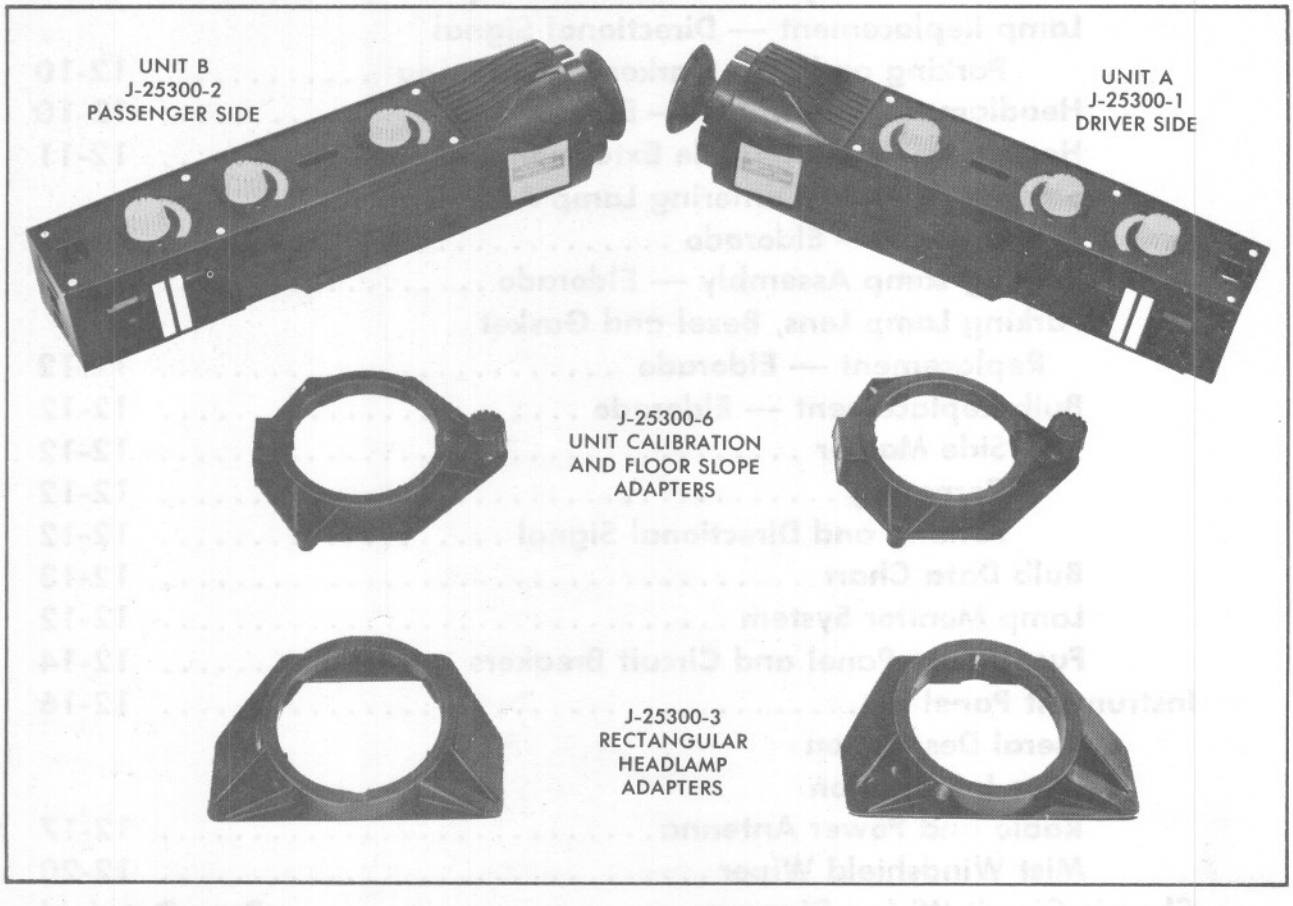


Fig. 12-1 Headlamp Aiming Tool J-25300

assembly. Separate grommets are used only when the car is equipped with trackmaster, and/or guide matic.

A complete full color chassis circuit wiring diagram is located on the rear gatefold.

Lamps and Bulbs

Although the rectangular headlamp unit bulb numbers are 4652 low beam and 4651 high beam they may also be identified by a code on the lens. 1A identifies the lamp as an inner or high beam unit while 2A indicates that the lamp is an outer or low beam unit. The identification is located to the left of the upper headlamp aiming guide point.

Rearrangement of existing telltale lamp locations and the addition of new indicators have changed many bulb requirements. The bulb data chart located on page 12-12 contains a complete listing of these and all other bulbs.

Instrument panel courtesy lamp bulbs are the push-in wedge type. A one piece courtesy lamp housing and shield is used.

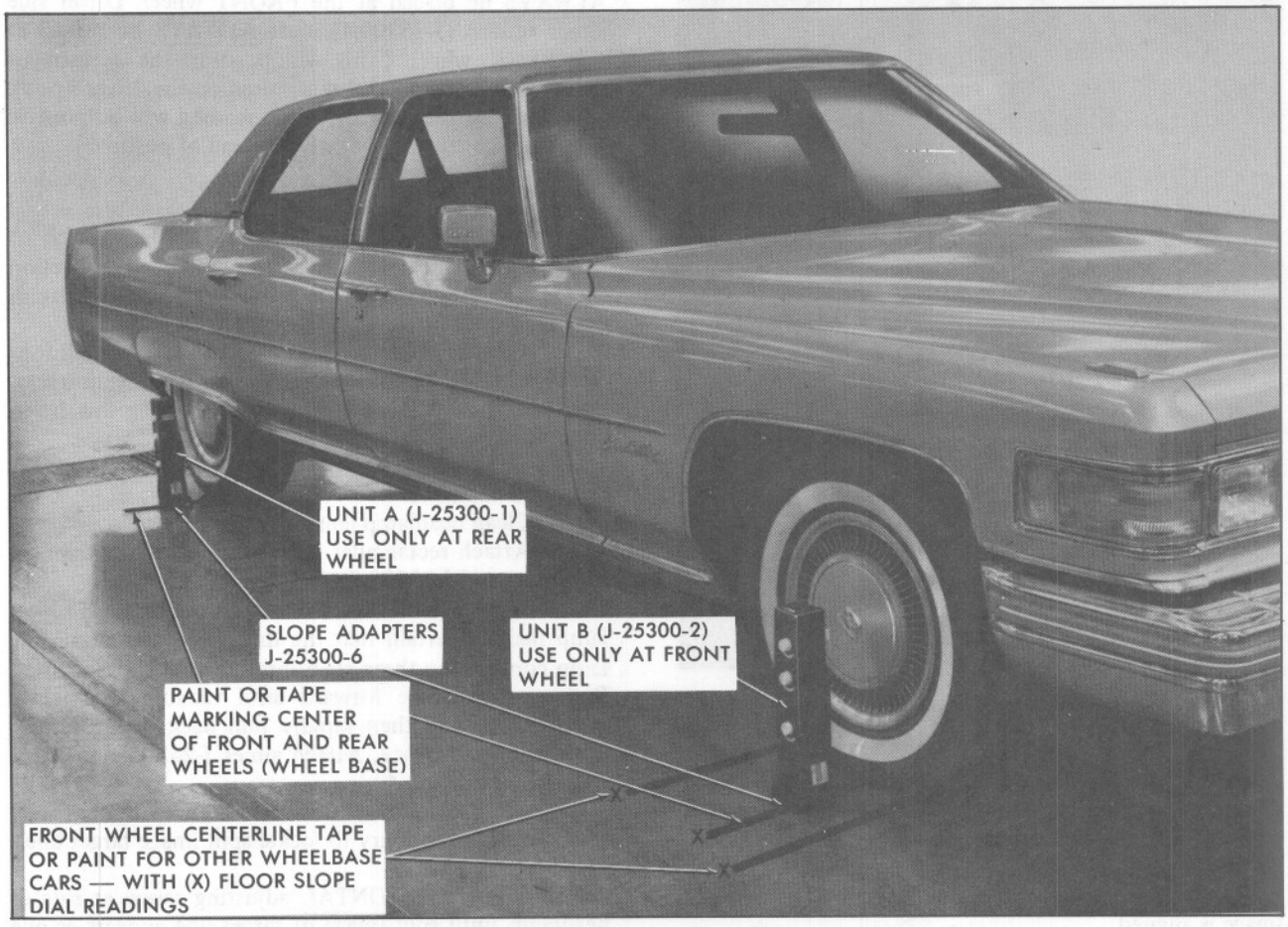


Fig. 12-2 Checking Floor Slope

SERVICE INFORMATION

1. Headlamp Aiming—Mechanical Aimer Method

a. Adjusting Aimer to Floor Level

(NOTE: To obtain accurate headlamp aim, the car must be placed on a flat surface. The surface need not be exactly level.)

1. Drive car onto selected area.
2. Attach one floor compensation and calibration adapter J-25300-6 to each aimer unit A and B (J-25300-1 and J-25300-2).
3. Place aimers at the center line of each wheel on the passenger side of the car as shown, in Fig. 12-2.

Place Unit B (J-25300-2) at the FRONT wheel
Place Unit A (J-25300-1) at the REAR wheel

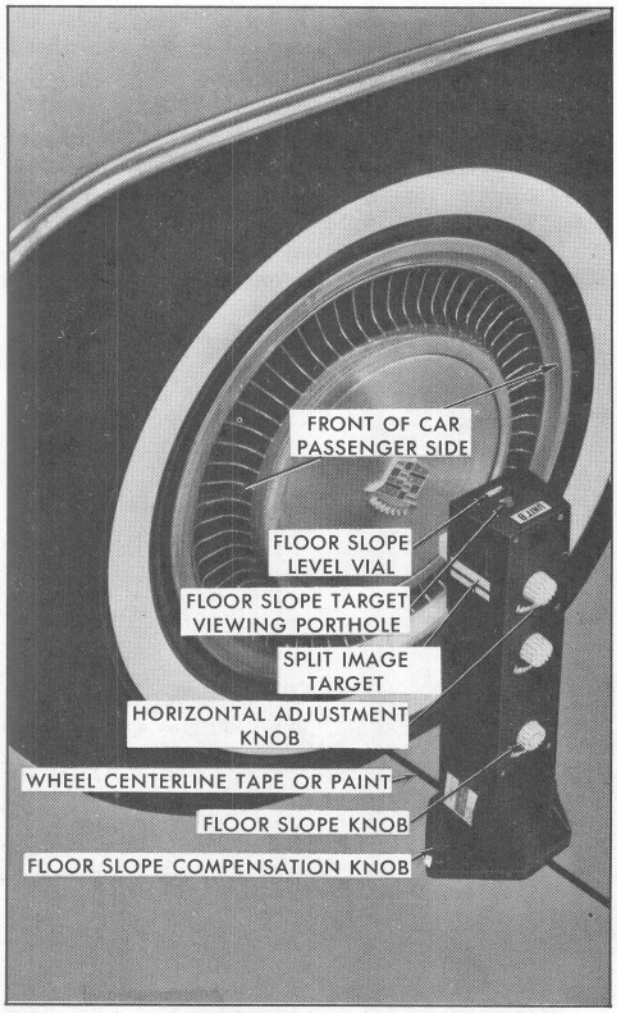


Fig. 12-3 Correcting for Floor Slope

4. Adjust floor slope compensation knob on each adapter until the level bubble on each aimer is in the centered or level position, Fig. 12-3.

5. Look into floor slope target viewing porthole on either unit and turn horizontal adjuster knob until split image is aligned.

6. Read horizontal dial, set floor slope knob (Fig. 12-3) to this reading, and reset horizontal knob to zero.

7. Repeat steps 5 and 6 at other wheel (Readings should be nearly equal – if they are not it is an indication that the aimers should be calibrated).

8. Remove floor compensation adapters from aimers.

(NOTE: The aimers are now adjusted for the slope of the floor on which the vehicle is positioned. With tape or paint mark the centerline of the rear wheel on the floor. Mark on the floor the centerline of the front wheel along with the plus or minus reading from the floor slope dial. For cars with a different length wheel base repeat steps 1 through 8 after positioning the rear wheels on the centerline mark. Mark the different front wheel centerlines and dial readings. Repeat for different wheel base lengths. The floor slope offset dial may now be immediately set to the mark next to the centerline of the front wheels of each following car, Fig. 12-2.)

If the floor is abnormally sloped, perform Steps 3 through 8 on BOTH sides of the car and average the two dial readings. Both slope offset dials must then be set at the average reading of the two sides.

(NOTE: When aimers are positioned to calibrate floor slope passenger side aimer unit B (J-25300-2) must ALWAYS be placed at the FRONT wheel. Driver side aimer unit A (J-25300-1) must ALWAYS be placed at the REAR wheel. (This will position the adjustment knobs toward the wheel when used on the driver's side). If aimers are reversed the slope reading will be positive instead of negative or negative instead of positive.)

b. Headlamp Adjustment

1. Adjust tire pressure as recommended in Section 10. Make certain car is at normal standing height as described in Section 3.

2. Check headlamps for correct operation. All four rectangular headlamps operate during high beam operation and the two outer lamps only during low beam operation. Turn off lamps before adjusting.

3. Check floor slope and set floor slope knobs as described in part A.

4. Clean headlamp lenses.

5. Attach rectangular adapters J-25300-3 to aimers J-25300-1 and J-25300-2.

6. Attach aimer J-25300-2 onto passenger outer lamp making certain that the three guide points on the lamp contact the three steel inserts inside the adapter. Push piston handle forward until vacuum cup tightly engages lens and then rapidly pull back piston handle until it locks in place. Attach aimer J-25300-1 to driver outer lamp, Fig. 12-4.

7. Set horizontal and vertical dials to zero. Rotate each aimer as necessary to locate split image target lines, Fig. 12-4.

8. Turn HORIZONTAL adjusting screw at side of headlamp until split image of target line appears as one line, Fig. 12-5.

(NOTE: Always make final adjustment by turning screw in a clockwise direction.)

Repeat adjustment on opposite headlamp.

9. Turn VERTICAL adjusting screw at top of headlamp until the level bubble is centered between the lines.

(NOTE: Individual state laws may vary and local authorities should be consulted for regulations on dial settings.)

(NOTE: Always make final adjustment by turning screw in a clockwise direction.)

Repeat adjustment on opposite headlamp.

10. Recheck target alignment on each side and readjust horizontal aim if necessary.

11. Hold aimer securly and release by pushing vacuum release button located on piston handle.

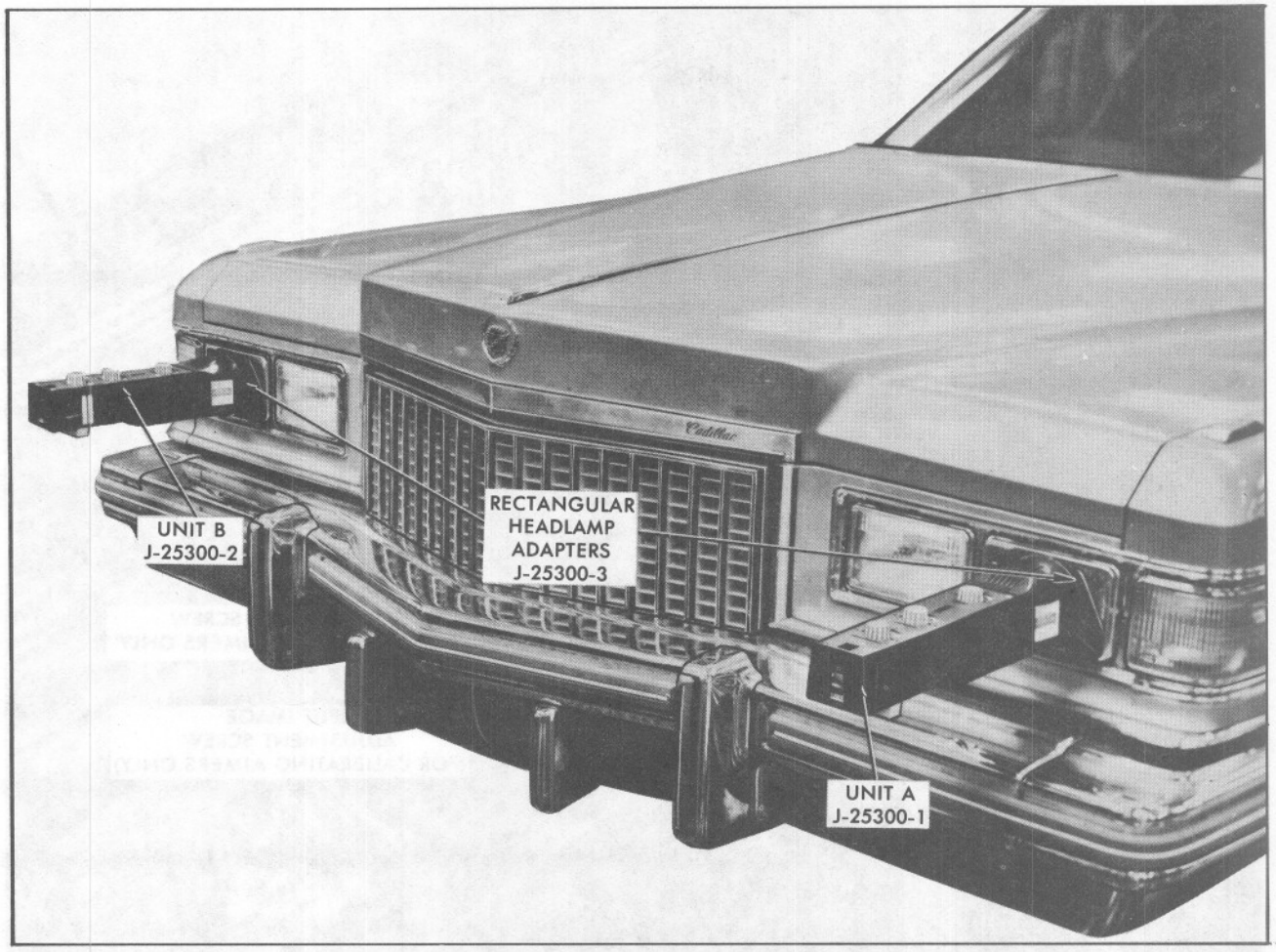


Fig. 12-4 Aiming Headlamps

12. Repeat HORIZONTAL and VERTICAL adjustments for inner headlamps.

c. Calibrating Aiming Units

Aimers J-25300-1 and J-25300-2 are calibrated for use on a level floor prior to shipment from the manufacturer. The calibration should be checked after extended use (check local regulations) or after either unit is dropped or damaged.

1. Using a carpenter or stone mason spirit level locate a vertical plate glass window.
2. Attach calibration adapters J-25300-6 to aimers with level vial facing top of unit. Turn adapter adjusting screws until the threads extend approximately the same distance as the adapter support posts.
3. Secure aimers and adapters to the plate glass window using the same procedure as attaching the aimers to headlamps. The aimers should be three to five feet apart with targets facing each other.
4. Set the floor slope dial on each aimer to zero, Fig. 12-5.
5. Adjust the compensating knob on each adapter until the level vials are centered, Fig. 12-3.
6. After adjusting adapter level vials, turn VERTICAL dial knob on each aimer until aimer level vials are centered. If aimer vertical dial pointers are between 1/2 "Up" and 1/2 "Down" units are within VERTICAL calibration limits, Fig. 12-5.
7. Adjust HORIZONTAL dial knob on each aimer until split image targets align. If aimer horizontal dial pointers are between "1" left and "1" right units are within HORIZONTAL calibration limits.
8. If aimer units are not within specifications adjust VERTICAL aim calibration by inserting a 3/64 inch allen wrench into the adjusting hole in the vertical dial, Fig. 12-5. Turn wrench until the level vial is centered. Repeat on second aimer.

Adjust HORIZONTAL aim calibration by inserting a screwdriver into split image adjusting screw on right side of aimer, Fig. 12-5. Turn screw until split image aligns. Repeat on second aimer.

2. Headlight Aiming—Screen Method

The factory recommended headlight aiming specifications for the screen method are shown in Fig. 12-6. Individual State laws vary and dealers should check with local authorities.

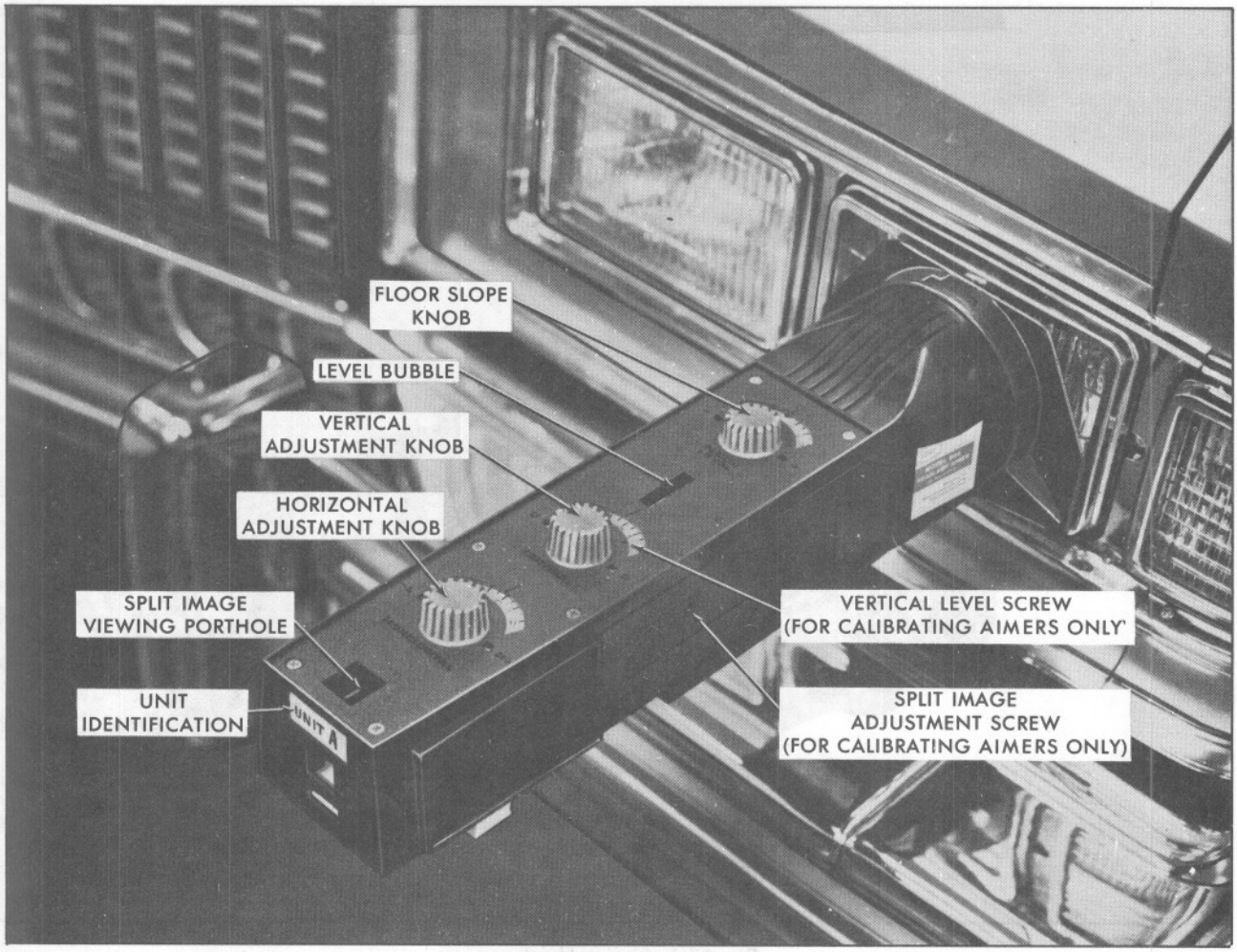


Fig. 12-5 Aimer Unit Parts Identification

a. Screen Diagram

Make a headlight aiming screen according to the dimensions and layout shown in Fig. 12-6.

b. Equipment Set-Up

Make sure headlight aiming screen is mounted at a point where there will be an ample level area in front of screen. It is important that floor at aiming screen is at same level as the floor at the point where car is positioned.

c. Headlight Adjustment

1. Position car so that headlights are exactly 25 feet from aiming screen and car is in line with centerline on screen. To position car, sight through rear window, lining up centerline of rear window reveal molding escutcheon with inside rear view mirror bracket and car centerline on screen.

2. Position two 36 inch sticks vertically at the left front and left rear wheels. Sight over sticks and move left side of screen up or down, as required, to line up horizontal headlight centerline on screen with the 36 inch sight line. Follow same procedure on right side.

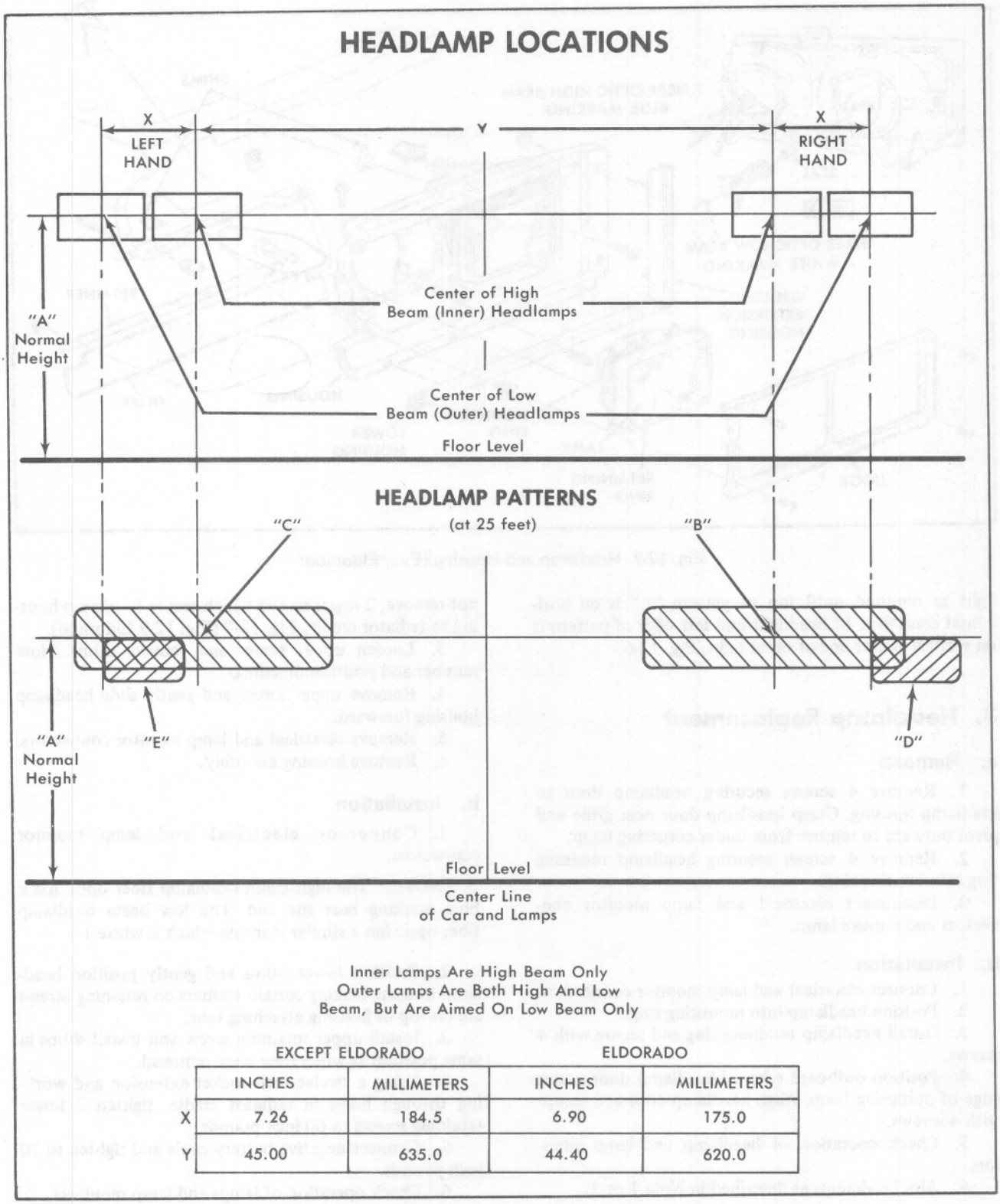
3. Mark wall adjacent to horizontal centerline of headlight line on aiming screen. Subtract the curb height from 36. Using the new dimension, mark down on the wall from the 36 inch mark.

Move screen down until horizontal centerline of headlight is even with this point.

Series	Rear Suspension	Curb Height @ ℄ Headlamps Inches	Centimeter
Brougham	All	27.66	70.26
Calais, DeVille	Std.	27.52	69.90
	A.L.C.	27.74	70.46
75 Series	Sedan	28.02	71.17
	Limousine	27.67	70.28
Eldorado	All	26.25	66.68
Commercial Chassis	All	27.79	70.59

4. Set headlights on high beam. Make sure all four headlights are on.

5. Cover both left side headlights and right side outer light and adjust right inner light as required until pattern centers at point "B" on screen, Fig. 12-6.



	EXCEPT ELDORADO		ELDORADO	
	INCHES	MILLIMETERS	INCHES	MILLIMETERS
X	7.26	184.5	6.90	175.0
Y	45.00	635.0	44.40	620.0

Fig. 12-6 Headlamp Location and Patterns

6. Cover both right side headlights and left side outer light and adjust left inner light as required until pattern centers as point "C" on screen, Fig. 12-6.

7. Set headlight on low beam. Only outer headlights should light.

8. Cover left outer headlight and adjust right outer light as required until top of pattern "D" is on horizontal centerline of headlight and left edge of pattern is on vertical centerline of outer light, Fig. 12-6.

9. Cover right outer headlight and adjust left outer

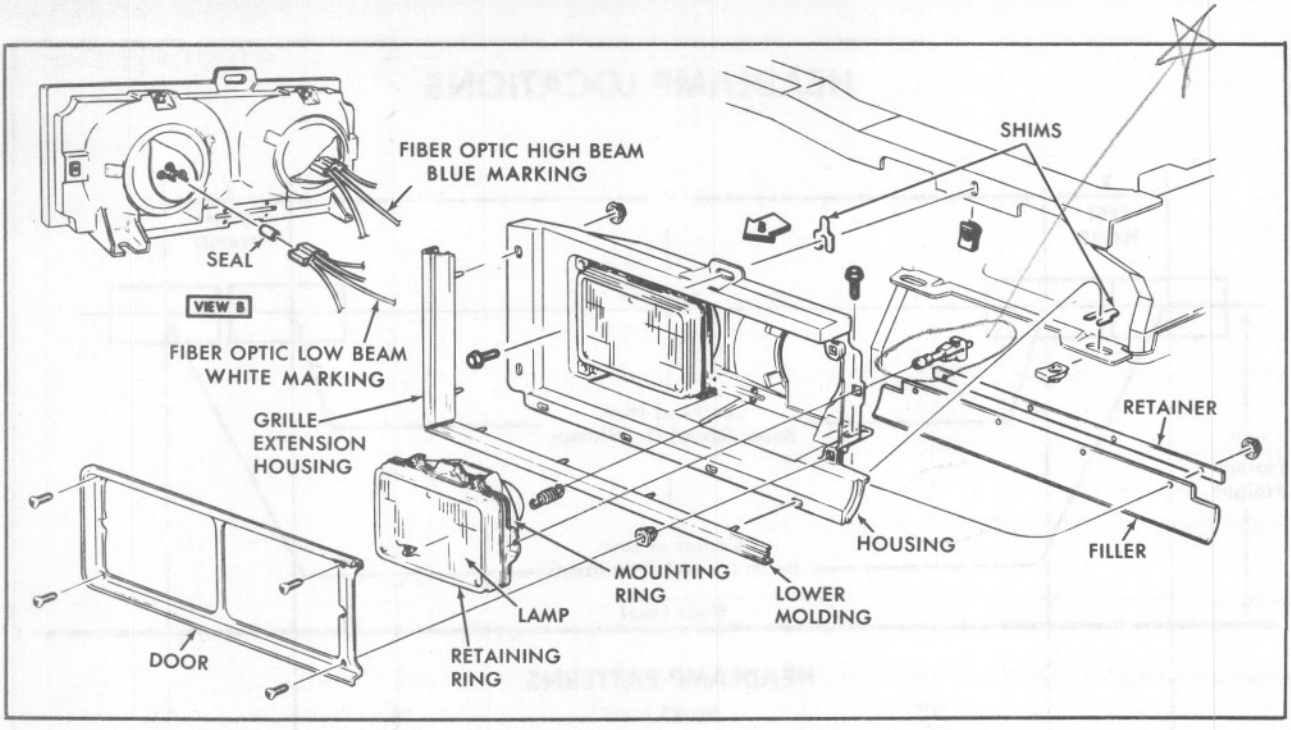


Fig. 12-7 Headlamp and Housing (Exc. Eldorado)

light as required until top of pattern "E" is on horizontal centerline of headlight and left edge of pattern is on vertical center line of outer light, Fig. 12-6.

3. Headlamp Replacement

a. Removal

1. Remove 4 screws securing headlamp door to headlamp housing. Grasp headlamp door near grille and pivot outward to remove from under cornering lamp.
2. Remove 4 screws securing headlamp retaining ring to mounting ring.
3. Disconnect electrical and lamp monitor connectors and remove lamp.

b. Installation

1. Connect electrical and lamp monitor connectors.
2. Position headlamp into mounting ring.
3. Install headlamp retaining ring and secure with 4 screws.
4. Position outboard edge of headlamp door under edge of cornering lamp. Align headlamp door and secure with 4 screws.
5. Check operation of headlamp and lamp monitors.
6. Aim headlamps as described in Note 1 or 2.

4. Headlamp Housing Assembly (Fig. 12-7)

a. Removal

1. Disconnect negative battery cable.
2. Using a twelve inch socket extension and working through holes in top of radiator cradle loosen, but do not remove, 2 lower screws which secure headlamp housing to radiator cradle, Fig. 12-7 (Fig. 12-9 Eldorado).
3. Loosen upper screw and remove shims. Note number and position of shims.
4. Remove upper screw and gently slide headlamp housing foreward.
5. Remove electrical and lamp monitor connectors.
6. Remove housing assembly.

b. Installation

1. Connector electrical and lamp monitor connectors.

(NOTE: The high beam headlamp fiber optic has a blue marking near the end. The low beam headlamp fiber optic has a similar marking which is white.)

2. Position lower shims and gently position headlamp housing making certain washers on retaining screws are on top of housing attaching tabs.
3. Install upper retaining screw and install shims in same position as when they were removed.
4. Using a twelve inch socket extension and working through holes in radiator cradle, tighten 2 lower retaining screws to 60 inch pounds.
5. Connect negative battery cable and tighten to 70 inch pounds.
6. Check operation of lamps and lamp monitors.
7. Aim headlamps as described in Note 1 or 2.

5. Headlamp Housing Trim Moldings (Fig. 12-7) Horizontal

a. Removal

1. Open hood, reach behind radiator grille and

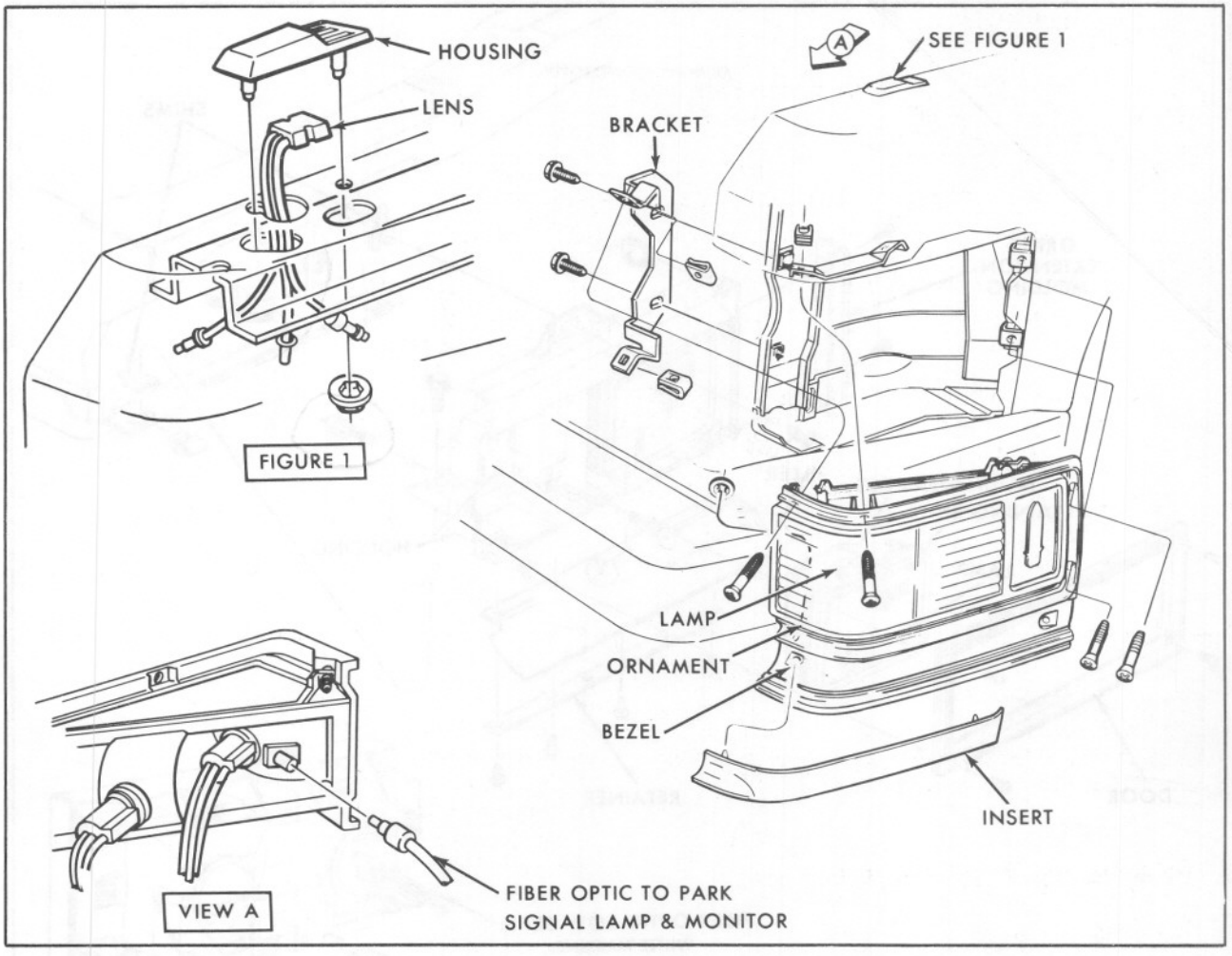


Fig. 12-8 Parking, Cornering and Directional Signal and Marker Lamp (Exc. Eldorado)

remove inboard nut securing horizontal molding to headlamp housing.

2. Reach under bumper and remove remaining three nuts securing molding to headlamp housing and remove molding, filler and retainer.

b. Installation

1. Position and align molding, filler and retainer. Reach under bumper and secure molding with 3 outer nuts.

2. Reach behind grille and install inboard nut. Close hood.

Vertical (Grille Extension)

a. Removal

1. Open hood, reach behind radiator grille and remove 2 nuts securing vertical molding to headlamp housing.

b. Installation

1. Position and align vertical molding. Reach behind grille and secure molding with 2 nuts.

6. Front Parking Signal, Cornering, Side Marker Lamp and Bezel Assembly (Fig. 12-8)

(NOTE: The lens is permanently assembled to the housing and is not serviceable separately.)

a. Removal

1. Disconnect two bulb and socket assemblies and fiber optic from back side of lamp and bezel assembly.

2. Remove 5 screws which attach lamp assembly to fender.

3. To remove lamp unit or chrome ornament from bezel, remove 4 screws from back of assembly.

4. To remove insert from bezel, remove 2 nuts from back of bezel.

b. Installation

1. Attach insert to bezel with 2 nuts.

2. Assemble chrome ornament to lamp unit, position both into bezel and secure with 4 screws.

3. Position lamp and bezel assembly onto fender and secure with 5 screws.

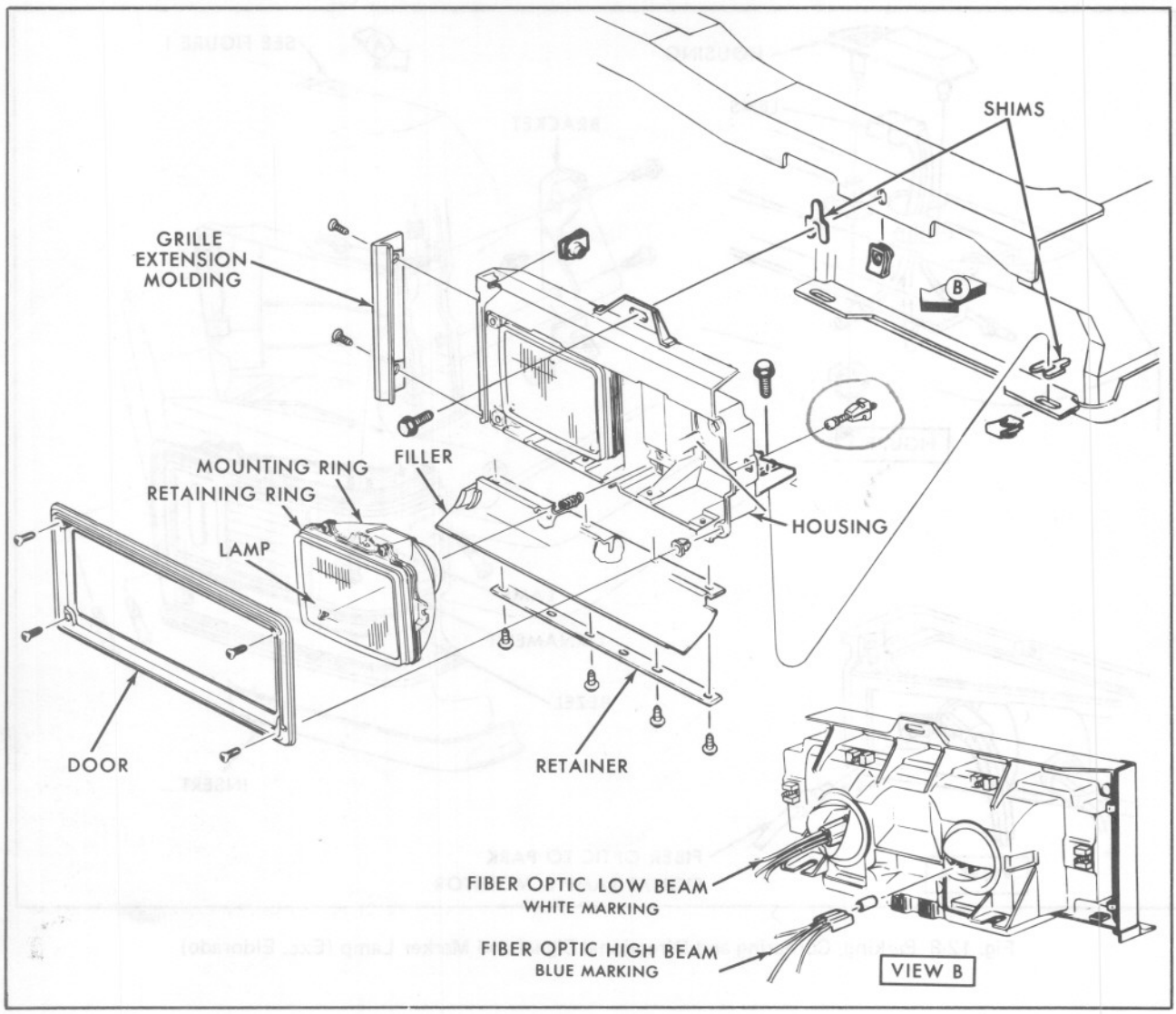


Fig. 12-9 Headlamp and Housing – Eldorado

4. Connect parking and directional signal lamp and socket into front lamp pocket. Connect cornering lamp and socket into rear lamp pocket. Connect fiber optic into pocket next to parking and directional signal lamp.

7. Directional Signal, Parking and Side Marker or Cornering Lamp bulb Replacement (Fig. 12-8)

Access to the bulbs is gained by opening the hood and removing the bulb and socket from the back side of the particular lamp assembly.

8. Headlamp Replacement (Eldorado) (Fig. 12-9)

a. Removal

1. Remove 4 screws servicing headlamp bezel to headlamp housing.
2. Remove 4 screws securing headlamp retaining ring to mounting ring.
3. Disconnect electrical and lamp monitor connector.
4. Remove lamp monitor grommet from headlamp and remove headlamp.

b. Installation

1. Install lamp monitor grommet onto headlamp.
2. Connect electrical connector and position headlamp into mounting ring.
3. Install headlamp retaining ring and secure with 4 screws.
4. Position headlamp bezel and secure with 4 screws.
5. Check operation of headlamps and lamp monitors.
6. Aim headlamps as described in Note 1 or 2.

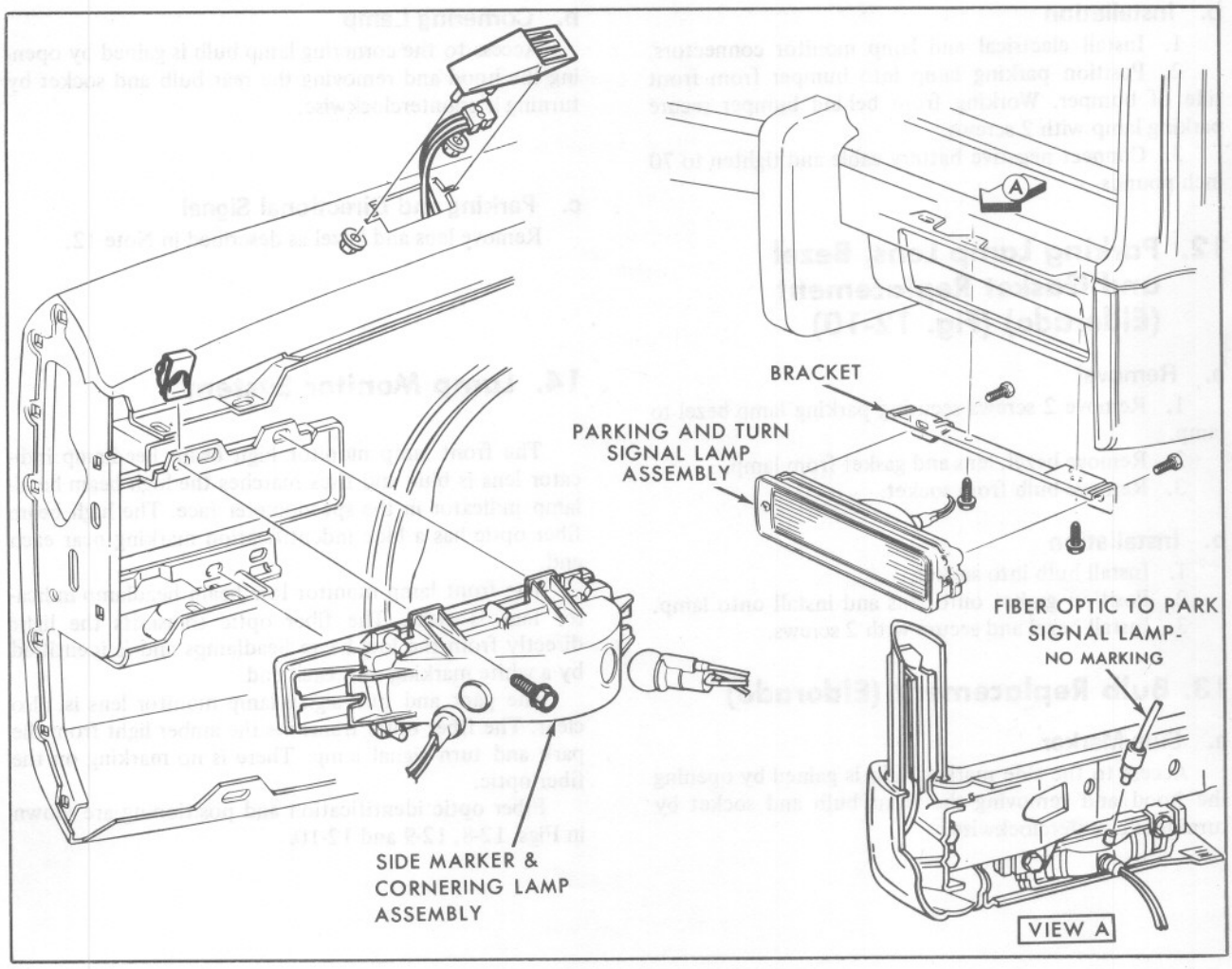


Fig. 12-10 Parking, Cornering, Directional Signal and Marker Lamps – Eldorado

9. Headlamp Housing Grille Extension Molding (Eldorado) (Fig. 12-9)

a. Removal

1. Open hood.
2. Reach behind radiator grille and remove 2 screws from grille edge of grille extension molding.

b. Installation

1. Position and align molding onto headlamp housing.
2. Reach behind radiator grille and secure molding with 2 screws.

10. Side Marker and Cornering Lamp Assembly and Bezel (Eldorado) (Fig. 12-10)

a. Removal

1. Remove 3 screws securing lamp assembly to fender.
2. Remove lamp assembly and disconnect electrical and lamp monitor connectors.
3. Remove 4 screws securing bezel to lamp assembly.

b. Installation

1. Install bezel to lamp assembly and secure with 4 screws.
2. Connect electrical & lamp monitor connectors.
3. Position lamp assembly into fender and secure with 3 screws.

11. Parking Lamp Assembly (Eldorado) (Fig. 12-10)

a. Removal

1. Disconnect negative battery cable.
2. Reaching behind bumper remove 2 screws which secure parking lamp to bumper.
3. Disconnect electrical and lamp monitor connectors and remove lamp through front of bumper.

b. Installation

1. Install electrical and lamp monitor connectors.
2. Position parking lamp into bumper from front side of bumper. Working from behind bumper secure parking lamp with 2 screws.
3. Connect negative battery cable and tighten to 70 inch pounds.

12. Parking Lamp Lens, Bezel and Gasket Replacement (Eldorado) (Fig. 12-10)

a. Removal

1. Remove 2 screws securing parking lamp bezel to lamp.
2. Remove bezel, lens and gasket from lamp.
3. Remove bulb from socket.

b. Installation

1. Install bulb into socket.
2. Position gasket onto lens and install onto lamp.
3. Install bezel and secure with 2 screws.

13. Bulb Replacement (Eldorado)

a. Side Marker

Access to the side marker bulb is gained by opening the hood and removing the front bulb and socket by turning it counterclockwise.

b. Cornering Lamp

Access to the cornering lamp bulb is gained by opening the hood and removing the rear bulb and socket by turning it counterclockwise.

c. Parking and Directional Signal

Remove lens and bezel as described in Note 12.

14. Lamp Monitor System

The front lamp monitor high beam headlamp indicator lens is blue and thus matches the high beam headlamp indicator in the speedometer face. The high beam fiber optic has a blue indentification marking near each end.

The front lamp monitor low beam headlamp indicator lens is clear. The fiber optic transmits the light directly from the low beam headlamps and is identified by a white marking near each end.

The park and turn signal lamp monitor lens is, also clear. The fiber optic transmits the amber light from the park and turn signal lamp. There is no marking on the fiber optic.

Fiber optic identification and positioning are shown in Figs. 12-8, 12-9 and 12-10.

BULB DATA CHART

FUNCTION	BULB NUMBER	CANDLEPOWER
Accessory Switch Illumination	1445	.7
Air Cushion Telltale Lamp	194	2
Ash Tray Lamp	1445	.7
Ash Tray Lamp - R.H. Front Door	1445	.7
Back-Up Lamp	1156	32
Clock	1895	2
Cornering Lamp	1295	50
Courtesy Lamp-Instrument Panel	906	6
Courtesy Lamp-Front Door, Rear Door Rear Quarter Armrest	212/212-1/212-2	6
Courtesy Lamp-Sail Panel	90	6
Cruise Control Illumination, and Indicators	1445	.7
Fuel Gage	194	2
Fuel Economy Telltale Lamps	194	2
Generator Telltale Lamp	194	2
Glove Compartment Lamp	1816	3
Headlamp-Inner	4651	50 Watts
Headlamp-Outer	4652	40 W/60W
Headlamp Switch Lamp	1816	3
Climate Control Lamp	1816	3
High Beam Indicator	194	2
Instrument Panel Lamp	194	2
License Lamp (exc. Commercial Chassis)	194	2
License Lamp–Commercial Chassis	67	4
Low Brake Telltale Lamp	194	2
Low Oil Pressure Telltale Lamp	194	2
Low Washer Fluid Telltale	161	1
Map Lamp	562	6
Marker Lamp-Front Side (exc. Eldorado)	194A	2
Marker Lamp-Front Side (Eldorado)	97A/97NA	4
Marker Lamp-Rear Side (Eldorado)	168	3
Marker Lamp-Rear Side (exc. Eldorado)	194	2
Opera Lamp	756	.3
Park-Signal Lamp	1157NA	24/2.2
Radio Dial Lamp	1895	2
Radio AM-FM Band, Stereo or Tape Indicators	*Special	—
Radio-Rear Control Indicator	250	1
Rear Window Defogger Indicator Lamp	194	2
Seat Belt Telltale	194	2
Security System Telltale	1895	2
Spot Lamp-Front Compartment	90	6
Spot Lamp-Reading	1004	15
"Stop Engine Temp" Warning Light	194	2
Stop, Tail, and Signal	1157	32/3
L.H. Storage Compartment–ACRS	1445	.7
Trunk Compartment Lamp	1003	15
Trunk Lid Telltale	161	1
Turn Signal Indicator	194	2
Warning Lamp - Doors (Combined with Courtesy Light)	212/212-1/212-2	6
Water Temperature Telltale	194	2
Windshield Wiper Switch Illumination	161	1
Vanity Mirror	562	6

*Serviceable only by Radio Technician.

15. Fuses, Fuse Panel and Circuit Breakers

The fuse panel contains all electrical system fuses and circuit breakers except those listed in the chart on page 12-14. "Fusible Link" wires protect the starter motor.

With redesigned theft deterrent system the fuse block cover is no longer required. Fuses may be replaced without a special theft deterrent disarming procedure. Two theft deterrent 25 amp fuses are used as explained in the chart on page 12-14.

The rear window defogger circuit is protected by either a circuit breaker or 25 amp. in-line fuse.

The fuse panel and specific fuse locations are shown in Fig. 12-11. Fuses are color striped according to the code listed in the following chart.

Fuse	Color Stripe
3	Violet
5	Tan
7.5	Brown
10	Red
15	Light Blue
20	Clear
25	White

Factory installed unstriped fuses are 20 amp. For service replacement common unstriped fuses of the same amperage may be used. The amperage value on unstriped replacement fuse is listed on the metal end cap. Fuses should be replaced with one of exactly the same amperage as listed in Fig. 12-11.

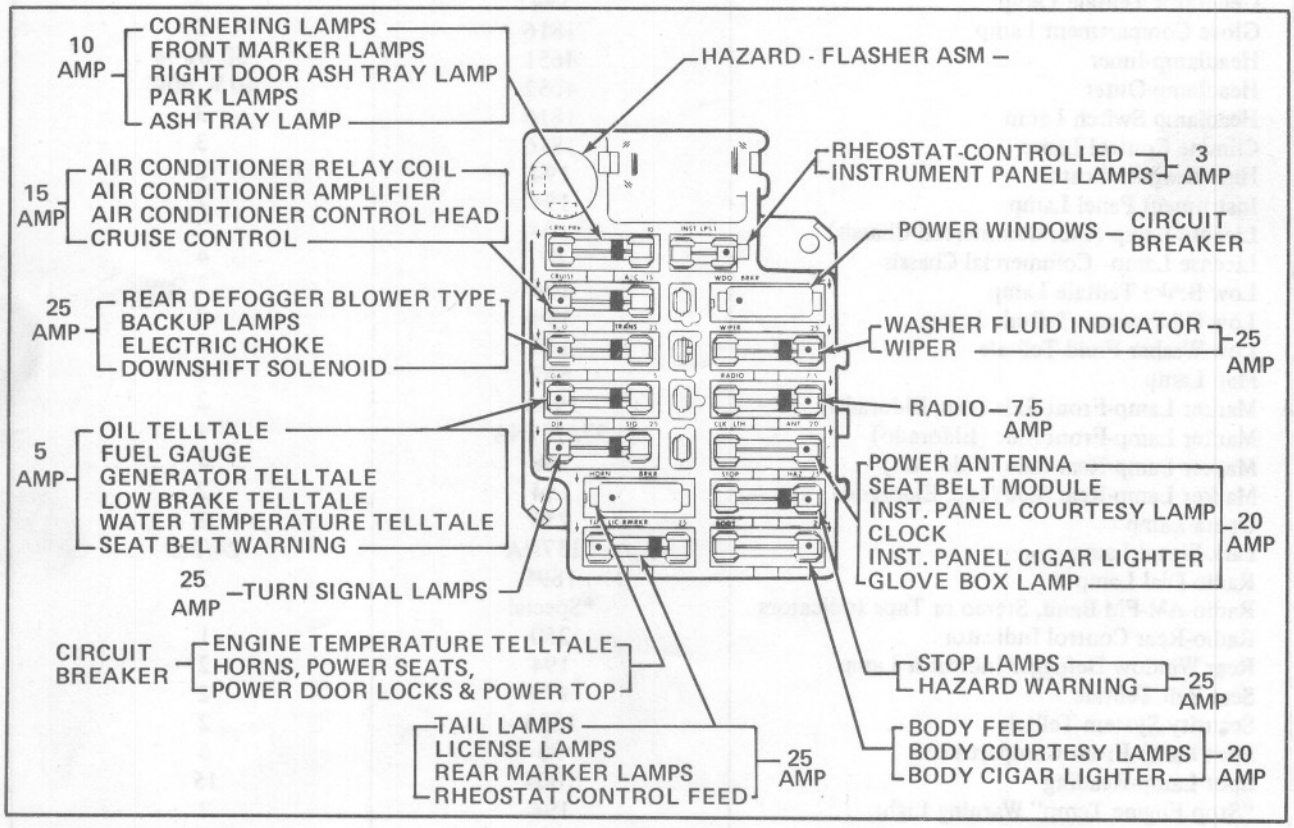


Fig. 12-11 Fuses and Fuse Panel

FUSES, CIRCUIT BREAKERS, FLASHERS EXTERNAL TO FUSE PANEL

Circuit	Location	Device
Headlights	Integral with Headlight Switch	Circuit Breaker
Rear Window Defogger	In Line near Fuse Panel (Approx. 5" from Panel – Yellow Wire) OR . . .	25 Amp Fuse
	On Right Hand Side of Steering Column Lower Cover Reinforcement	Circuit Breaker
Sunroof	On Left Hand Instrument Panel Brace	Circuit Breaker
Trackmaster	In Line near Fuse Panel (Approx. 8" from Panel – Pink Wire)	4 Amp Fuse
Vanity Mirror	Behind Mirror	2 Amp Fuse
Turn Signal Flasher	On Left Hand Side of Steering Column Lower Cover Reinforcement –	#323 Flasher
Twilight Sentinel	Integral with Headlight Switch	Circuit Breaker
Air Cushion Restraint System	In Line near Sensor-Recorder (Below Radio)	20 Amp Fuse
Theft Deterrent	In Line above Radio (Black with Red Stripe Wire) AND . . .	25 Amp Fuse
	In Line above Radio (Yellow Wire)	25 Amp Fuse

GENERAL DESCRIPTION

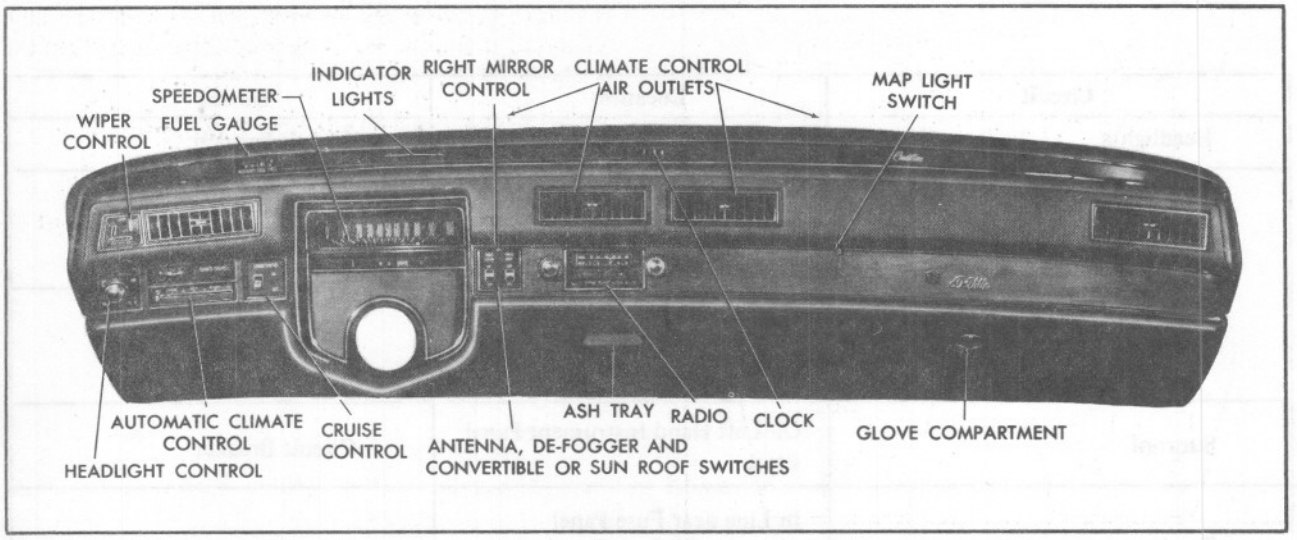


Fig. 12-12 Instrument Panel

The instrument panel, Fig. 12-12, is similar to 1974. In appearance the speedometer and transmission selector quadrant are black with white lettering. The right hand insert and applique is redesigned and features a series emblem and script designation.

The numerals on the digital clock are redesigned for improved readability.

The fuel gage is boldly lettered "Unleaded Fuel Only" as a reminder that leaded or low lead fuel should not be used. Use of other than unleaded fuel could lessen the effectiveness of the catalytic converter.

Telltale Housing (Fig. 12-13)

Rearrangement of existing telltale lamp locations and the addition of new indicators have changed many bulb requirements. The Bulb Data Chart located on page 12-12 contains a complete listing of these and all other bulbs.

The WASHER FLUID and TRUNK OPEN telltales are moved to the first and second positions from the left. In their former positions are the optional fuel economy indicator green and amber bulbs. The fifth indicator from the left houses the redesigned theft deterrent system indicator and is labeled SECURITY SYSTEM.

Accessory Switch Bulb Location

All cars are equipped with a radio and power antenna as standard equipment. This reduces the number of accessory switch bulb location possibilities to those shown in Fig. 12-13. Proper bulb location and type are important to ensure correct accessory switch lighting.

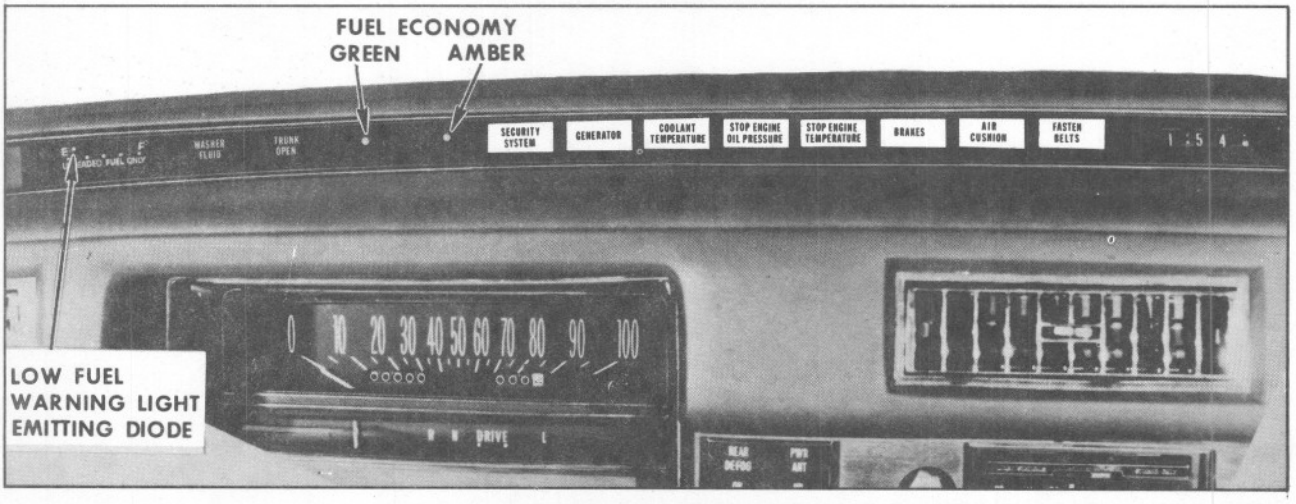


Fig. 12-13 Telltale Housing Assembly

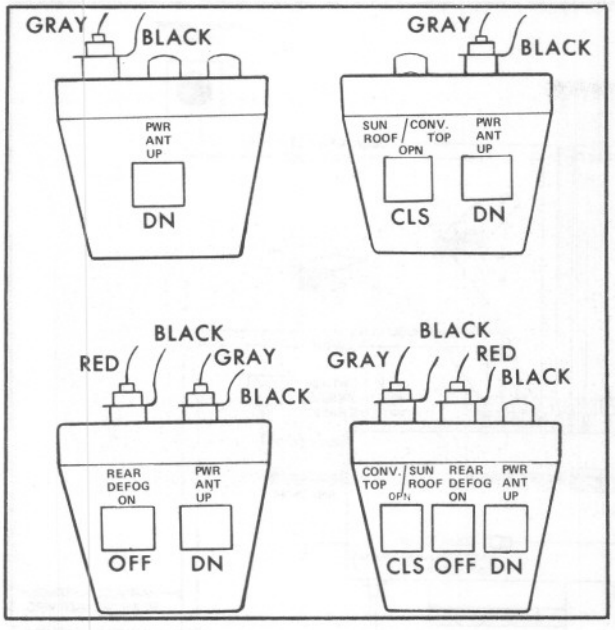


Fig. 12-14 Accessory Switch Bulb Locations

Trackmaster Controller

The trackmaster controller is mounted to the top of the glove box liner on all except Air Cushion Restraint System equipped cars. Service operations remain unchanged.

Rear Window Defogger Relay

The rear window defogger relay is attached to the lower steering column cover reinforcement to the left of the turn signal flasher.

SERVICE INFORMATION

Radio and Power Antenna

The radio and power antenna wiring routing is changed. With the radio and power antenna as standard equipment and the addition of the center bulkhead connector wire routing is as shown in Fig. 12-15. The power antenna harness is now part of the underhood A/C harness, Fig. 12-16.

The power antenna uses the 20 AMP. CLK/LTR/ ANT fuse for circuit protection. The motor and drive assembly are sealed to prevent the entrance of moisture and reduce corrosion. The lead-in cable is of one piece construction.

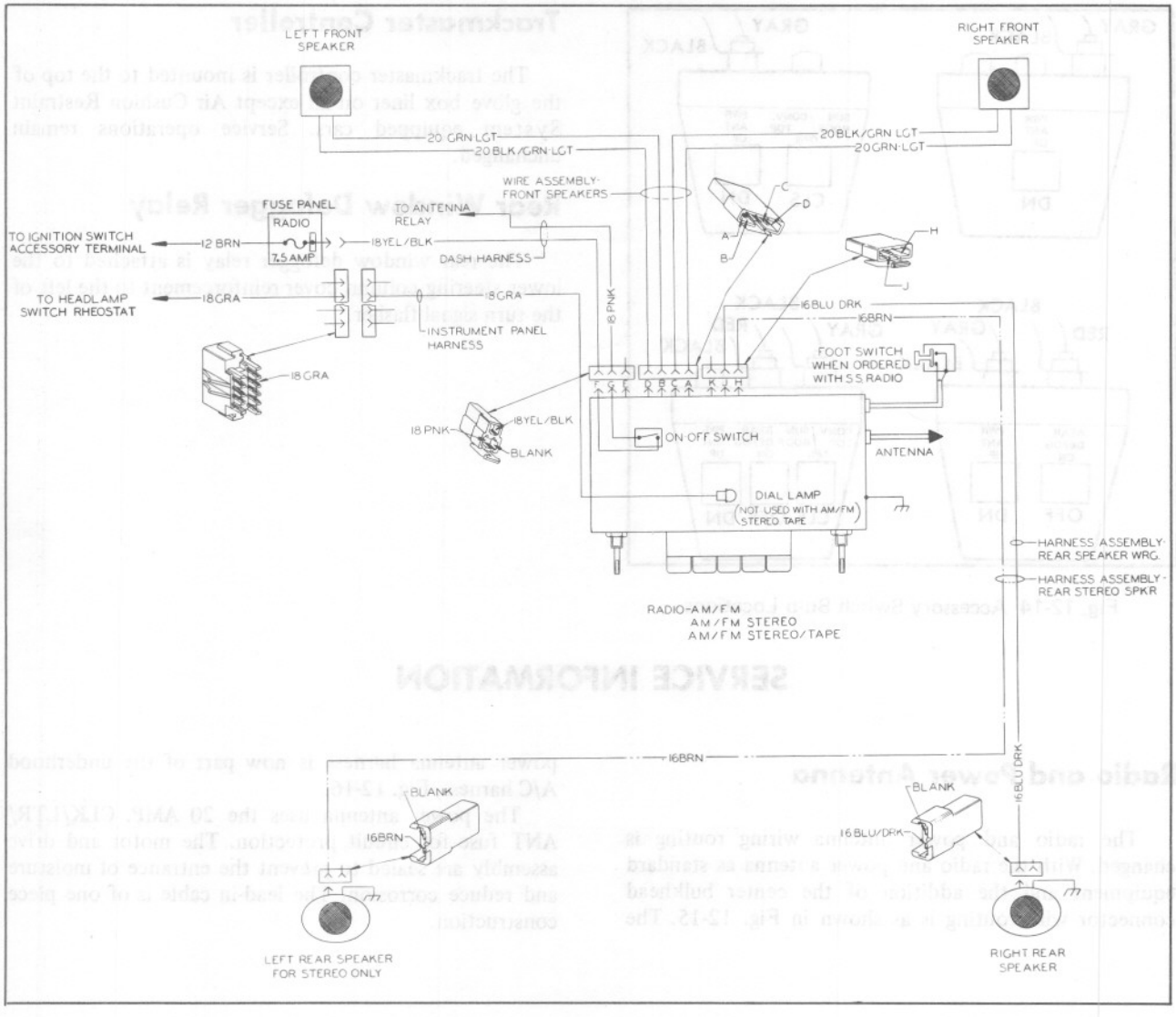


Fig. 12-15 Radio Wiring Circuit Diagram

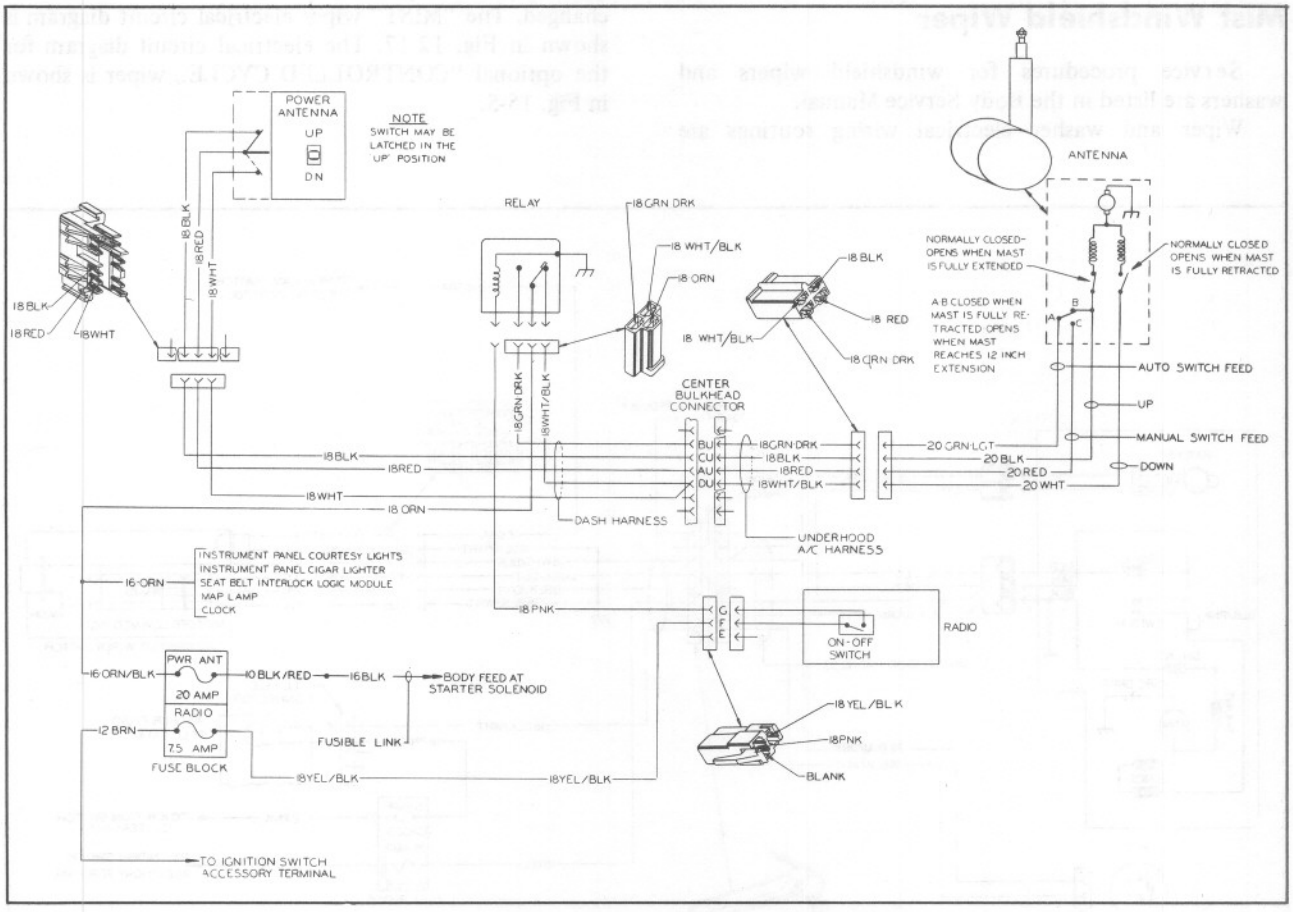


Fig. 12-16 Power Antenna Electrical Circuit Diagram

Mist Windshield Wiper

Service procedures for windshield wipers and washers are listed in the Body Service Manual.

Wiper and washer electrical wiring routings are changed. The "MIST" wiper electrical circuit diagram is shown in Fig. 12-17. The electrical circuit diagram for the optional "CONTROLLED CYCLE.. wiper is shown in Fig. 15-5.

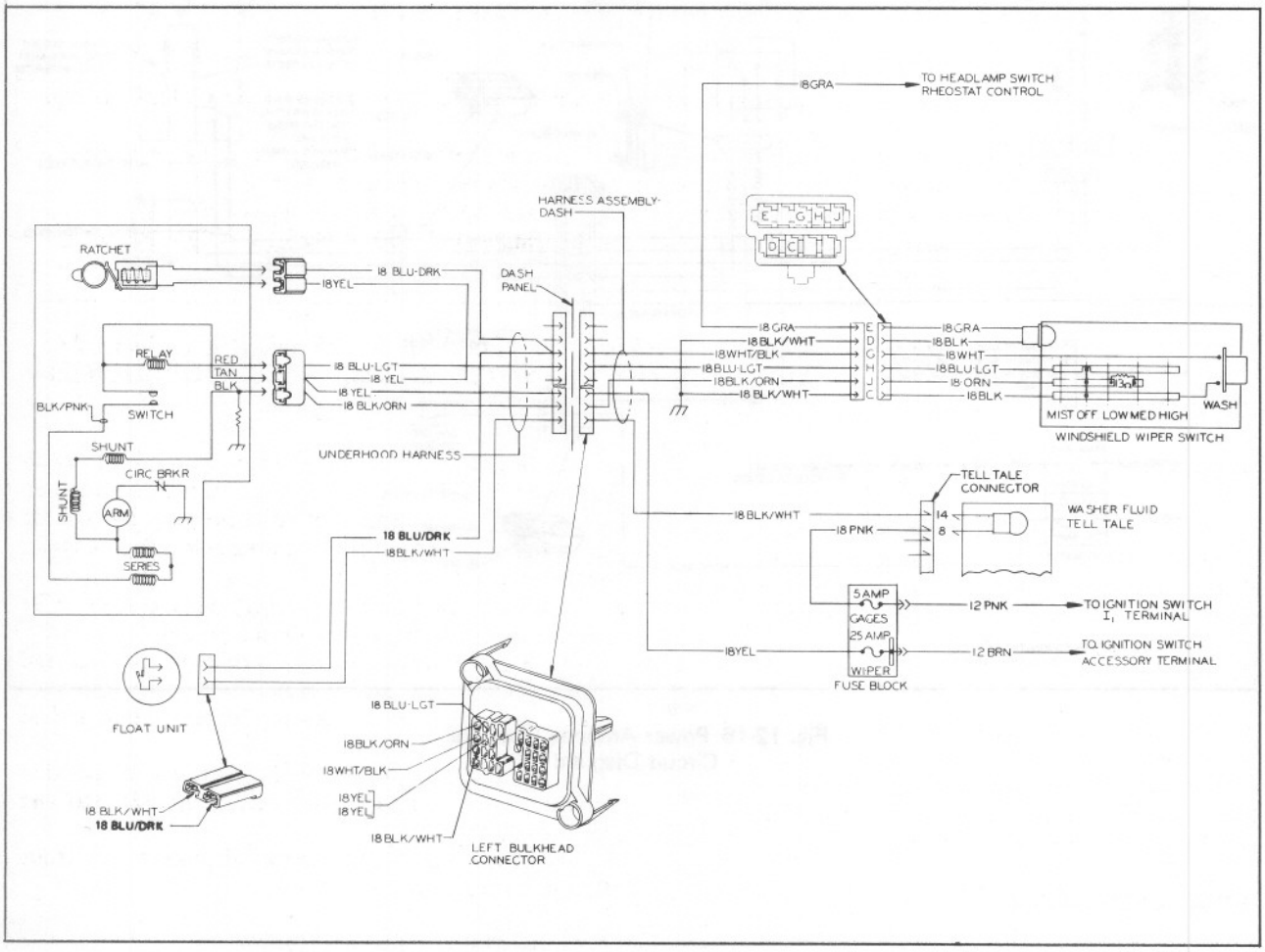


Fig. 12-17 Windshield Wiper Wiring Circuit Diagram

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF THE FRONT BUMPER OR COMPONENTS UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS. IN ADDITION, CARE MUST BE EXERCISED TO NEVER BUMP OR STRIKE THE BUMPER IMPULSE DETECTOR IN A MANNER WHICH COULD CAUSE INADVERTENT DEPLOYMENT OR IMPROPER OPERATION OF THE SYSTEM.

A.C.R.S. DISCONNECTION PROCEDURE

1. Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

2. If removing or replacing front bumper, remove bolts from bumper impulse detector to bumper impulse detector bracket and tape impulse detector to radiator support until bumper work is completed.

3. Inspect impulse detector for any visual damage to case or mounting. If damaged – replace assembly.

4. Inspect wiring harness for chaffing, cuts or any visible damage. DO NOT ATTEMPT ANY REPAIR OF HARNESS. If damaged – replace assembly.

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

Radiator

The radiator on 1975 Cadillac cars is three and one half inches wider for improved cooling. The heavy duty radiator on Seventy-Five series cars and the Commercial chassis has a three plate transmission oil cooler.

Radiator Cradle

The radiator cradle, fan shroud and cradle cover have been changed due to the wider radiator. A support rod at the center, between the tie bars, adds rigidity in the hood lock area. The radiator grille lower air deflector has been changed because of the new cradle.

Upper Grille (Fig. 13-1)

a. Removal

1. Open hood.
2. If car is equipped with Guide-Matic, remove two screws securing Guide-Matic photo amplifier to grille and one screw securing bottom of strut rod to center bumper bar.
3. Remove two screws securing each end of grille to upper grille reinforcement.
4. Loosen one screw securing each of two rear grille mounting tabs to vertical grille supports.
5. Remove one screw securing center support rod to center bumper bar.
6. Taking care not to damage bumper, slide grille forward until disengaged from supports and reinforcement, then lift straight up.

b. Installation

1. Install U-nuts on four upper attaching lugs on grille.
2. Slide grille carefully into position to avoid scratching bumper. Engage slots in rear grille mounting tabs with retaining screws on grille supports and line up screw holes in grille upper lugs with holes in grille upper reinforcement.
3. Insert two screws securing each end of grille reinforcement, tightening to 30 inch-pounds.
4. Tighten screws securing grille tabs to left and right supports to 30 inch-pounds.
5. Install one screw securing center support rod to center bumper bar.
6. If car is equipped with Guide-Matic, position photoamplifier and strut rod to center Bumper Bar and secure with three screws.
7. Close hood and check alignment of grille. Readjust as required.

Lower Grille (Fig. 13-2)

a. Removal

1. Remove fasteners securing air deflector to lower center bar.
2. Remove four bolts securing lower grille to lower center bar.
3. Remove two screws securing lower grille to bumper upper center bar.
4. Pull grille straight back then tip one end up and drop grille straight down and out of car.

b. Installation

1. Lift lower grille into position and secure to bumper upper center bar with two screws, tightening to 30 inch-pounds.
2. Install four bolts between lower center bar and grille. Tighten to 18 inch-pounds.
3. Allow air deflector to rest on lower center bar and secure to lower center bar with fasteners.

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF THE FRONT BUMPER OR COMPONENTS UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS. IN ADDITION, CARE MUST BE EXERCISED TO NEVER BUMP OR STRIKE THE BUMPER IMPULSE DETECTOR IN A MANNER WHICH COULD CAUSE INADVERTENT DEPLOYMENT OR IMPROPER OPERATION OF THE SYSTEM.

A.C.R.S. DISCONNECTION PROCEDURE

1. Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

GENERAL DESCRIPTION

The front bumper is basically the same as on the 1974 model cars, with modifications made only in the lower center portion to accommodate the new grille. The lower center bar is narrower and has ears on the ends that attach to the bottom side of the bumper guards. The front license plate bracket lower leg attaches to the lower center bar with a self-tapping screw. Fig. 14-1.

Eldorado Front Bumper

The lower intermediate bar has been changed by the addition of park and turn signal lamps and an all new high bumper outer end.

The lamp is held in place by a right angle bracket attached with two bolts through the bracket, through the two upper tabs on the intermediate bar, and into two "U" nuts on the bottom of the upper center bar.

The lamp is attached to the other leg of the bracket with two self-tapping screws into ears on the lamp housing.

The outer end is a new stamping with an impact pad added at the front peak.

On the back side of the outer end is a vertical extension, which holds the decorative die cast end cap, and a horizontal extension which runs rearward to pick up the end of the bumper restrictor rod. Both of these parts are attached to the bumper end with the three studs on the impact pad and nuts on the back side.

The decorative die cast end cap is attached to the verticle extension with two studs and nuts. Fig. 14-1.

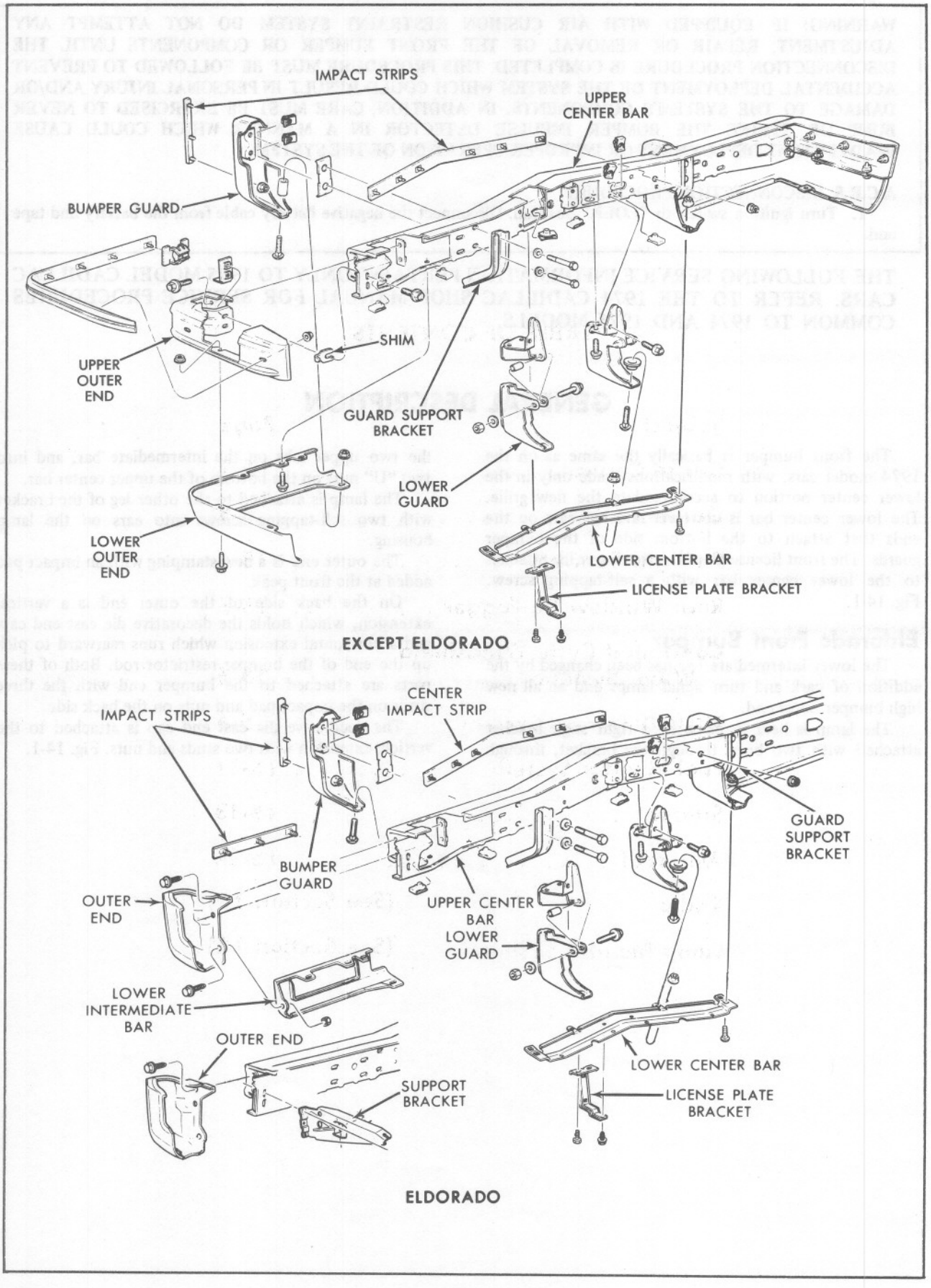


Fig. 14-1 Front Bumper – Disassembled

TABLE OF CONTENTS

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM, DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF ANY PORTION OF THE ELECTRICAL SYSTEM WHICH WOULD REQUIRE REMOVAL OR DISCONNECTING OF ANY COMPONENT OF THE AIR CUSHION RESTRAINT SYSTEM UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM'S COMPONENTS.

A.C.R.S. DISCONNECTION PROCEDURE

Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.

THE FOLLOWING SERVICE INFORMATION PERTAINS ONLY TO 1975 MODEL CADILLAC CARS. REFER TO THE 1974 CADILLAC SHOP MANUAL FOR SERVICE PROCEDURES COMMON TO 1974 AND 1975 MODELS.

CRUISE CONTROL

The one-piece harness is replaced with a jumper. The under dash jumper connects the driver's switch, dash harness and turn signal lever wiring, Fig. 15-1.

A pinned-in-place brake pedal switch is self-adjusted. After positioning slotted switch actuating arm over the actuating pin on the brake pedal arm and securing attaching screw, remove the indexing pin before actuating the brake pedal.

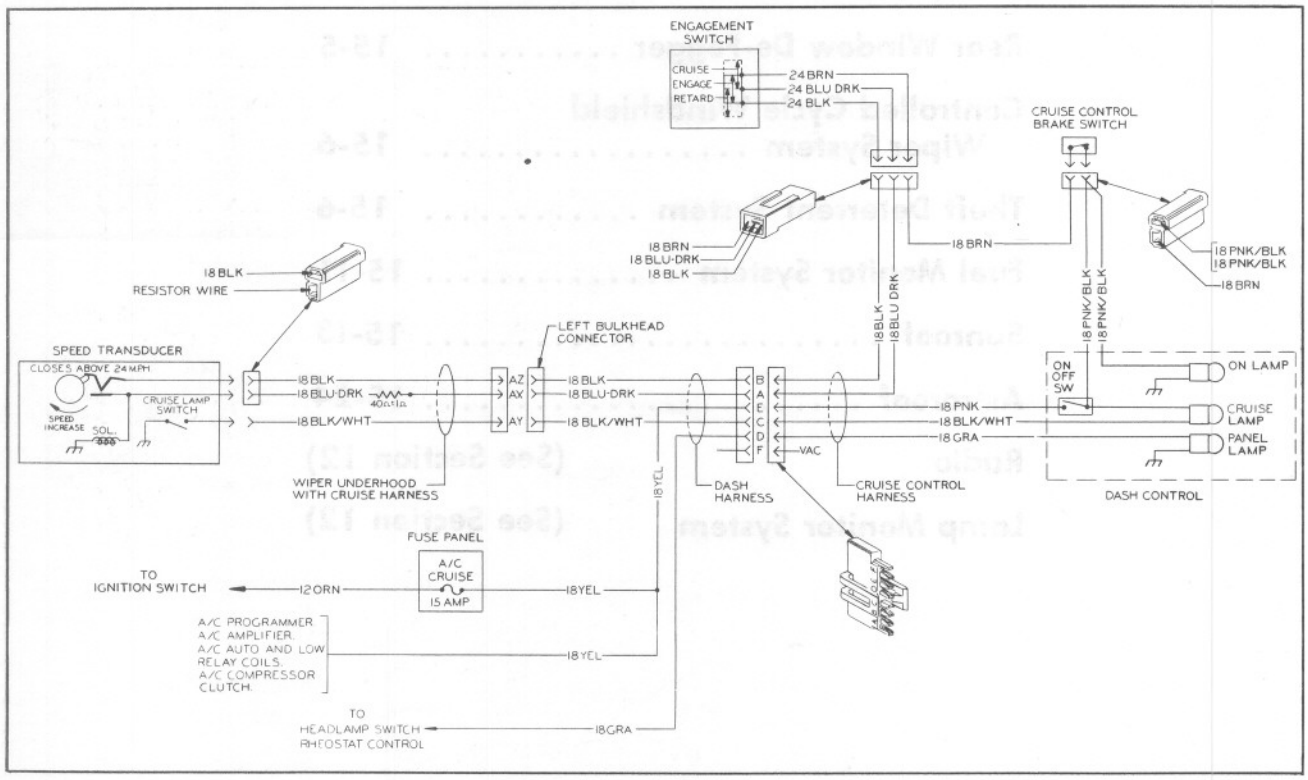


Fig. 15-1 Cruise Control Circuit Diagram

GUIDE-MATIC

The photo-amplifier mounting bracket attaches directly to the grille upper reinforcement. The mounting locations differ slightly on C-cars and Eldorados. When installing the mounting bracket on C-cars, use the locating holes marked "C"; and on Eldorados, the holes marked "E".

The light baffle boot has been replaced by a black plastic light shield that snaps into the mounting bracket.

The same photo-amplifier unit is used on all series cars.

The circuit diagram Fig. 15-2, shows the feed wire connection cavity change at the headlamp switch connector.

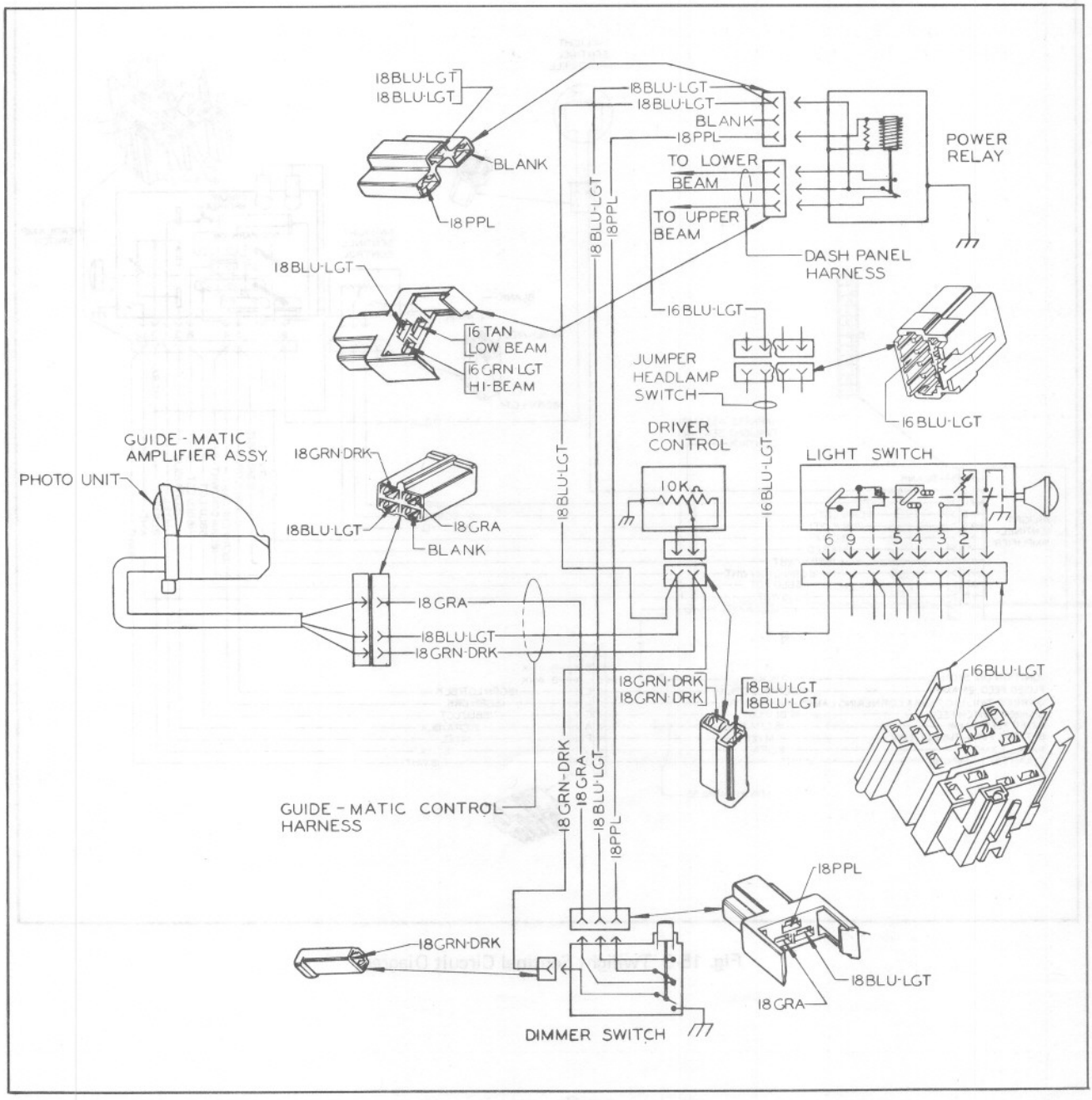


Fig. 15-2 Guide-Matic Circuit Diagram

TWILIGHT SENTINEL

The twilight sentinel circuit diagram, Fig. 15-3, shows the wiring into the headlamp switch connector.

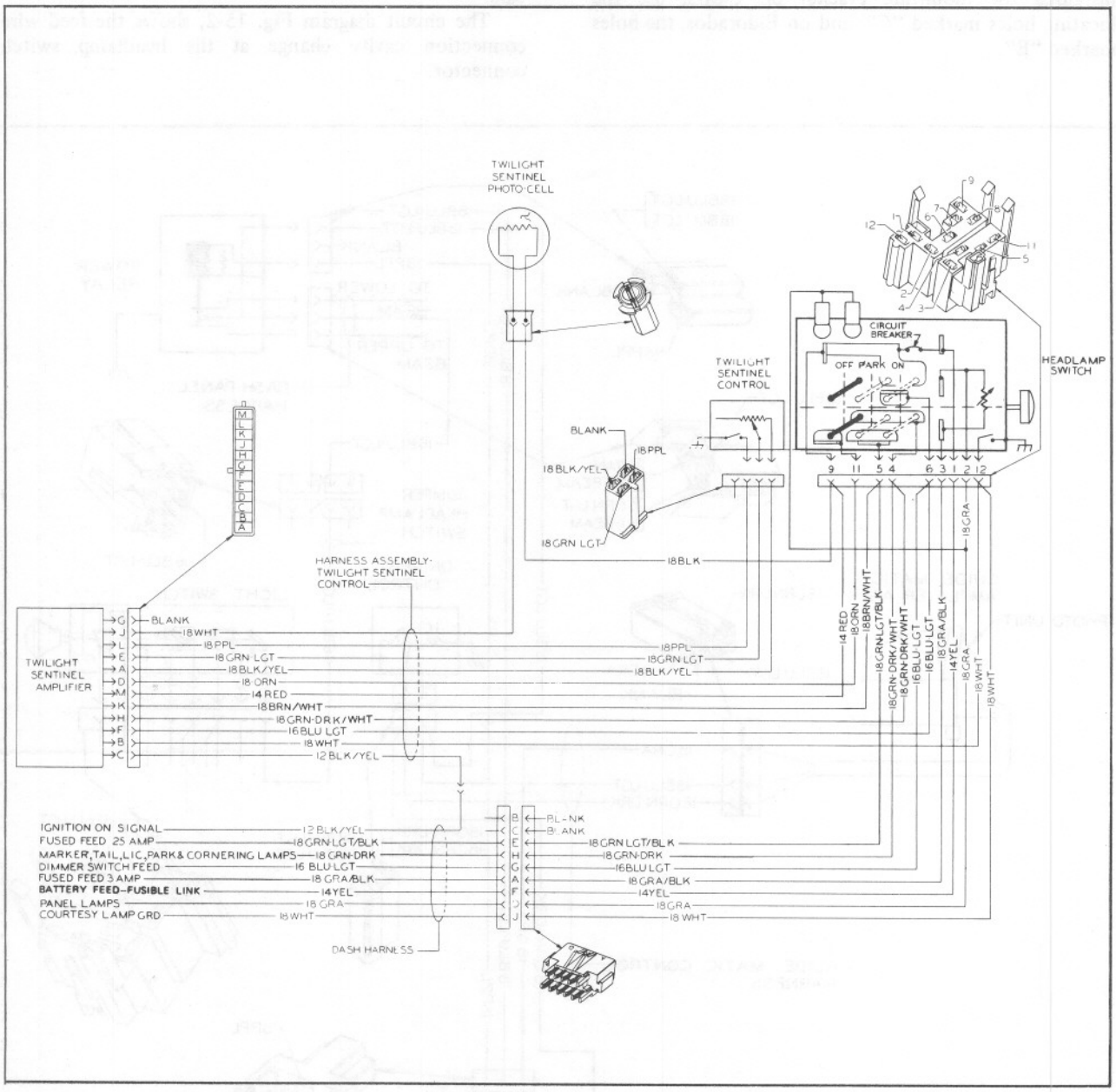


Fig. 15-3 Twilight Sentinel Circuit Diagram

REAR WINDOW DE-FOGGER

The rear window de-fogger in line fuse is replaced by a 25 amp. circuit breaker.

The circuit breaker and timer relay have been re-located to the instrument panel lower tie bar, Fig. 15-4.

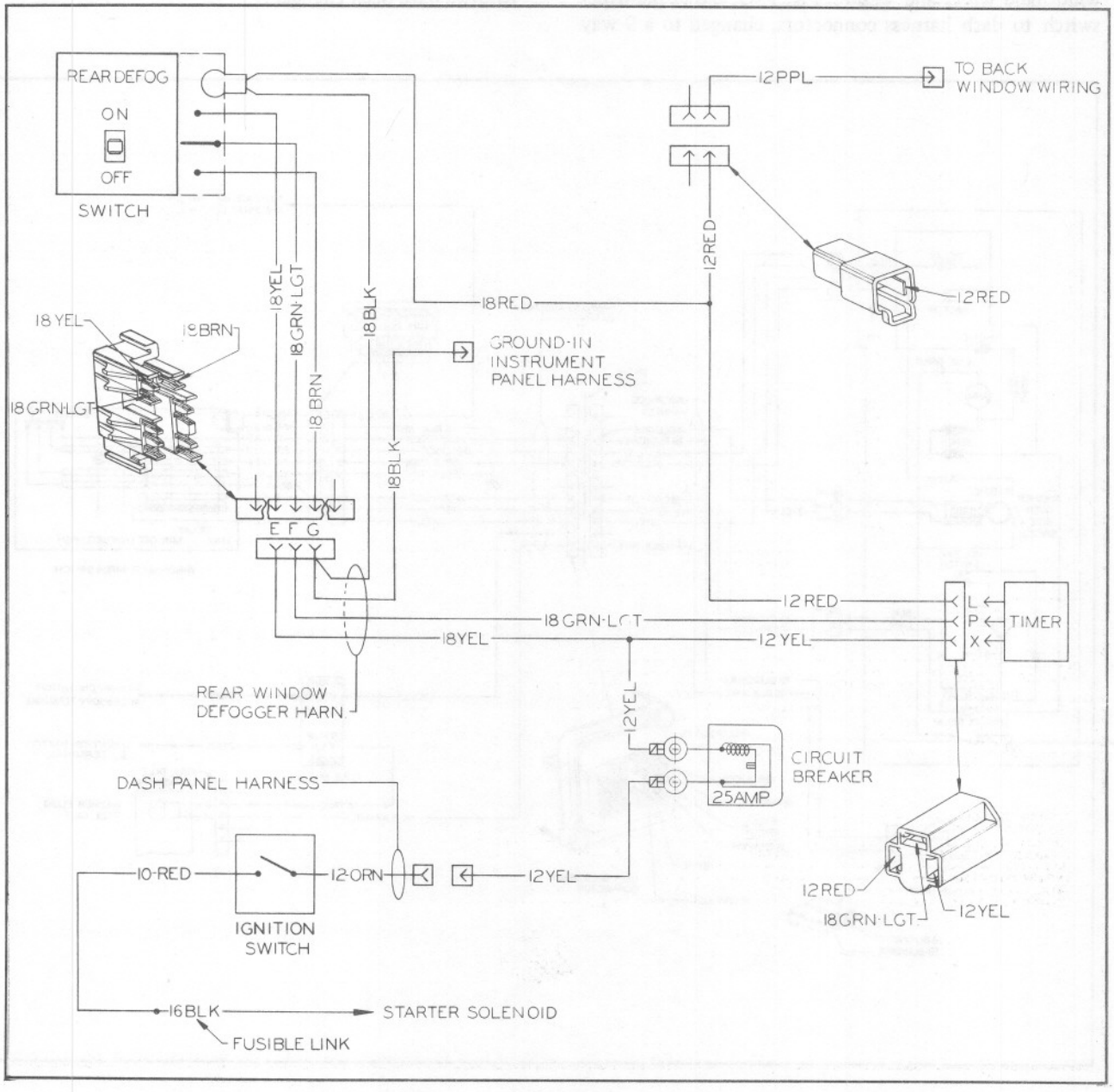


Fig. 15-4 Rear Window De-Fogger Circuit Diagram

CONTROLLED CYCLE WINDSHIELD WIPER AND WASHER SYSTEM

The circuit diagram for the controlled cycle windshield wiper and washer, Fig. 15-5, shows the wiper switch to dash harness connectors, changed to a 9 way connector. Wire positions in the bulkhead connector cavaties have been changed.

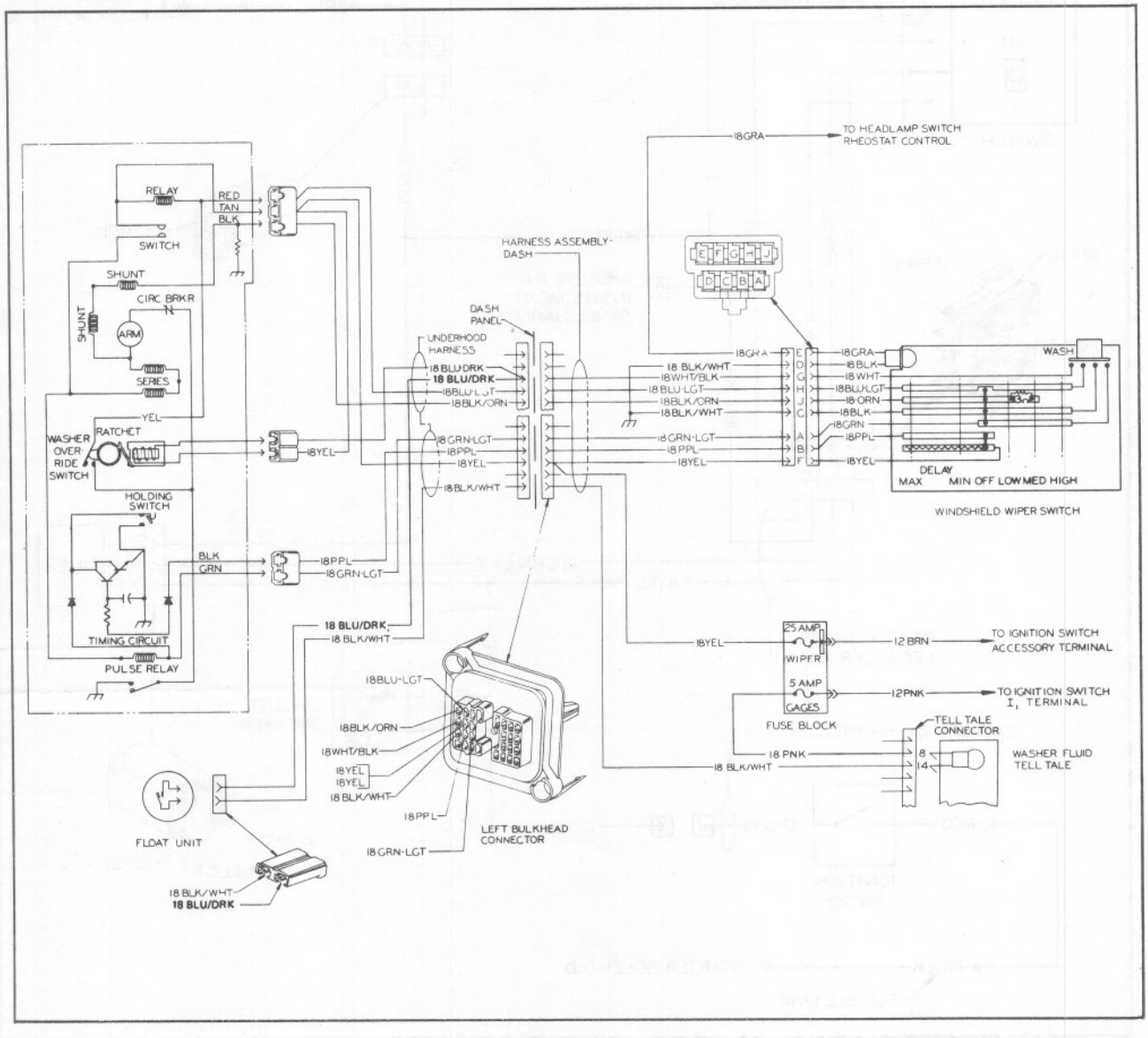


Fig. 15-5 Controlled Cycle Windshield Wiper Circuit Diagram

THEFT DETERRENT SYSTEM

The Electronic Theft Deterrent System is designed to provide additional protection for the vehicle, its contents, and trunk and underhood areas, when it has been properly armed.

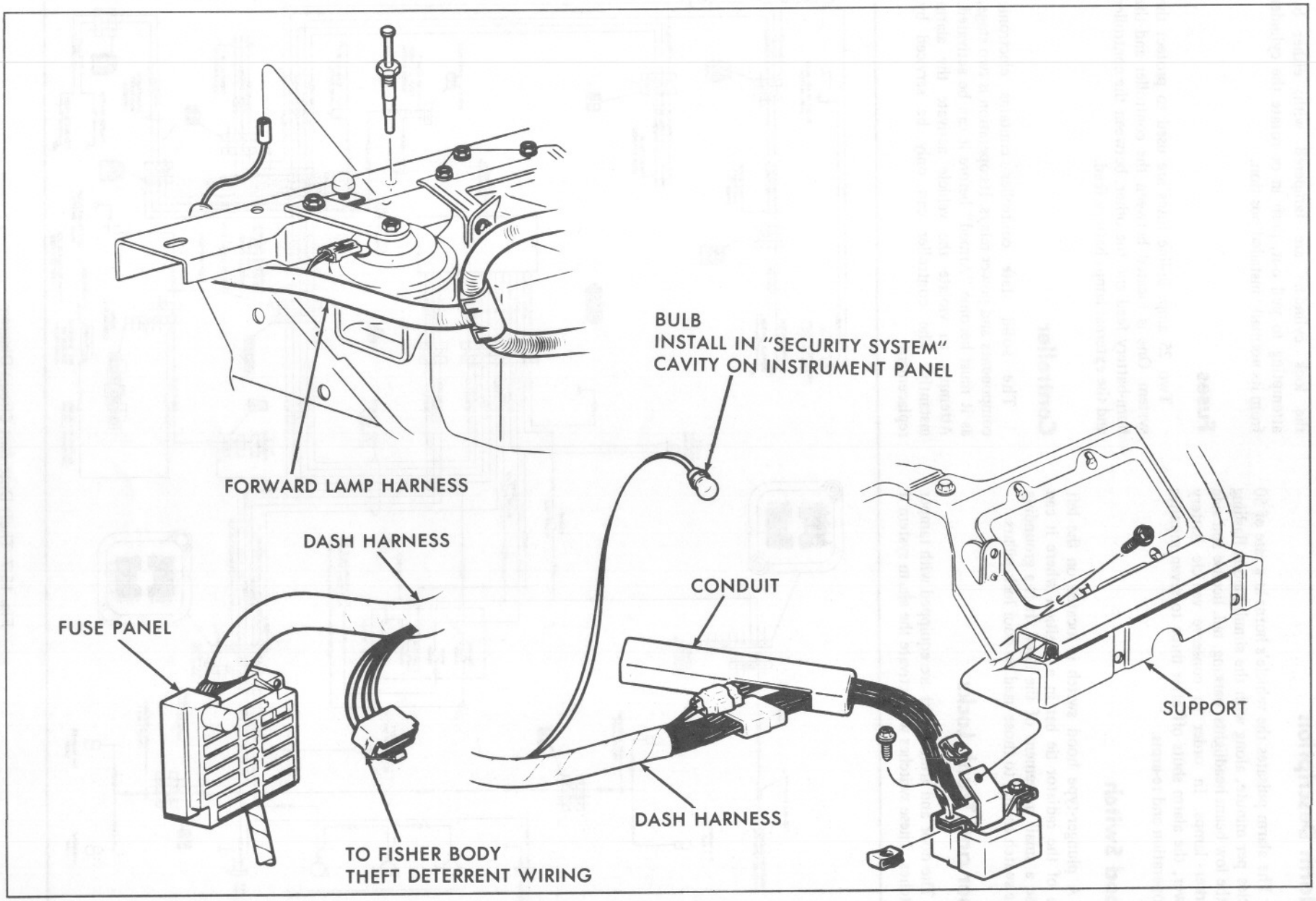


Fig. 15-6 Theft Deterrent Components

Alarm Description

The alarm pulsates the vehicle's horns at a rate of 50 cycles per minute, along with the simultaneous flashing of the low beam headlights, parking, tail, license and side marker lamps. In order to conserve vehicle battery power, the alarm shuts off after three to seven minutes of operation and re-arms.

Hood Switch

A plunger-type hood switch is located on the left side of the radiator tie bar in a position where it can sense a small movement of the hood. It is a grounding type switch similar to those used on door lock pillars.

Door and Trunk Locks

The door and trunk locks are equipped with tamper switches. These switches will activate the alarm system if the lock cylinders are tampered with, either by attempting to pull out, push in or rotate the cylinder from its normally installed position.

Fuses

Two 25 amp. in-line fuses are used to protect the system. One is located between the controller and the horn-battery feed and the other, between the controller and the external lamps battery feed.

Controller

The solid state controller contains electronic components and power relays. Its operation is two stage, as it must become "Armed" before it can be activated. Attempts to violate the vehicle activate the alarm instantly. The controller can only be serviced by replacement.

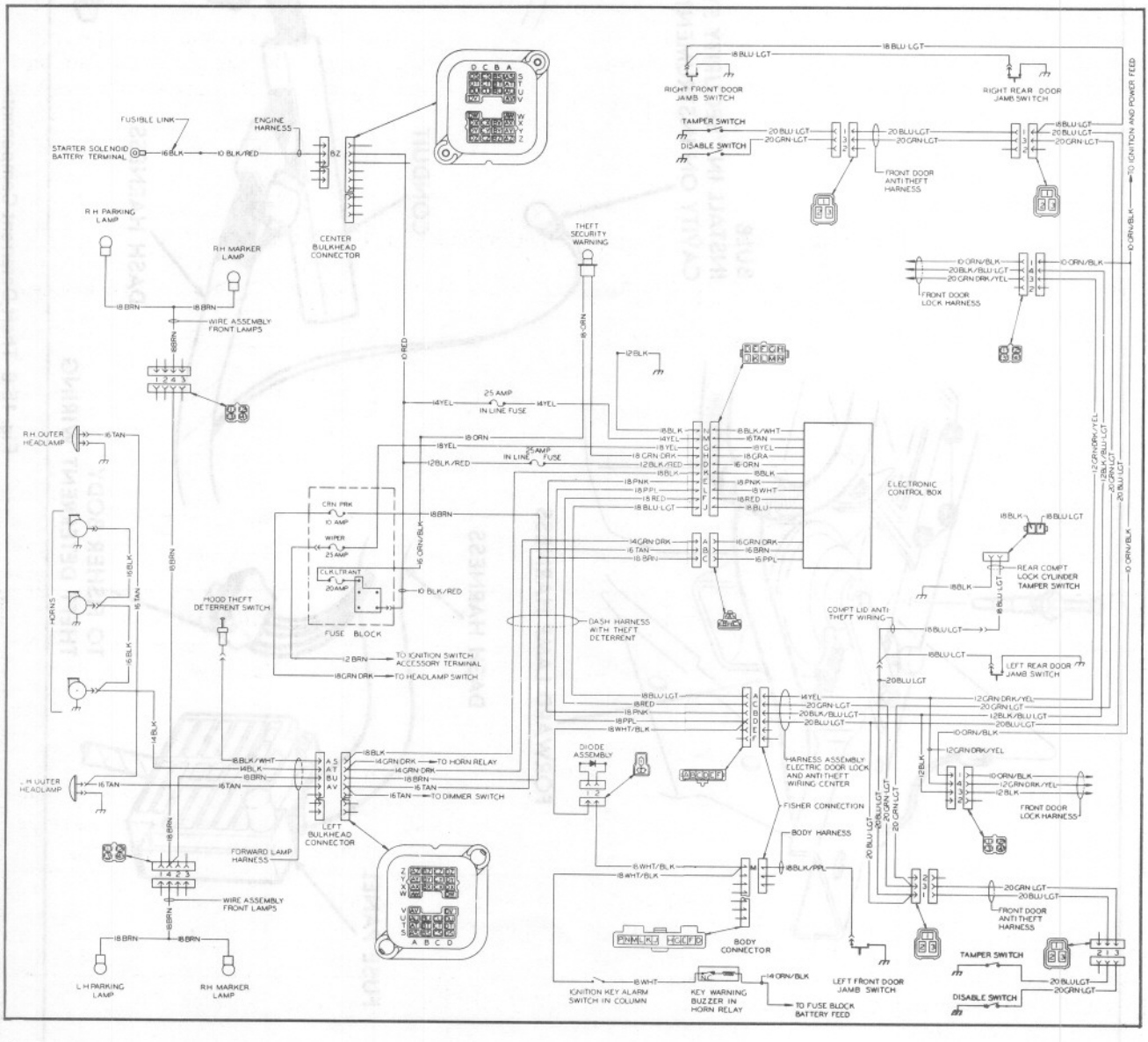


Fig. 15-7 Theft Deterrent Circuit Diagram

Location of Parts

As shown in Figs. 15-6 and 15-7, the electronic controller is located beneath the shroud panel reinforcement support, where it is accessible only after removing the instrument panel pad assembly. The security system indicator lamp is located in the accessory tell-tale lamp panel. The hood sensing switch is installed on the left-hand side of the radiator cradle tie bar in a position inaccessible when the hood is closed or on "Safety". The switch operates as the hood raises to its secondary latch or "Safety" position. The two 25 amp. in line fuses are located side by side above the radio, one fuse in the yellow wire and one in the black with red stripe wire.

Arming

After ignition turn off, the "Security System" lamp in the tell-tale panel will begin flashing when any door is opened. Activating the electric door lock switch to "Lock", causes the security lamp to illuminate steadily. When the last door is closed, the security lamp goes out and the system is armed. With the system armed, the trunk may be entered without setting off the alarm by opening the lock with the key.

Disarming

The system is disarmed or shut down (if activated) only by unlocking the door with the key.

If the driver wants to prevent arming the system after using the "Lock" switch, the switch is pressed to the unlock position before closing all doors. The doors may be locked mechanically using the lock knob or door key without arming the system.

Automatic Shut Down

Once the alarm is set-off, it will continue to operate, for a period of approximately 3 to 7 minutes and then shut off to conserve battery power. If the locks have not been damaged, the system will rearm itself.

If a lock has been damaged the "SECURITY SYSTEM" light flashes to alert the driver that the system has activated and the car should be inspected for theft and lock damage. The light does not flash with ignition on, but will continue to flash when the ignition is off.

THEFT DETERRENT DIAGNOSIS CHART

Before using the "THEFT DETERRENT DIAGNOSIS CHART", check the following inter-related electrical components for proper operation:

1. Horns
2. Exterior Lamps
3. Trunk, Door Lock Adjustments
4. Electric door lock circuits

(NOTE: Some system malfunctions DO NOT affect the operation of the tell-tale light. Therefore, a complete testing of proper alarm function is required in order to detect some problems.)

COMPLAINT	PROBABLE CAUSE	CORRECTION
System inoperative.	Open in one of the following wires: 1. Ground wire. 2. Battery feed. 3. Electric door lock wire. 4. Blown fuses.	Repair or replace as needed. Same as above. (If fuse in yellow wire is blown, horn only will activate. If fuse in black with red stripe wire is blown, system will not operate.)
	Check for loose connectors at controller to instrument panel harness or instrument panel harness to body harness.	Repair or replace as needed.
Unable to reverse arming process with "UNLOCK" switch.	Open in electric door "UNLOCK" wire.	Repair or replace as needed.

COMPLAINT	PROBABLE CAUSE	CORRECTION
"SECURITY SYSTEM" tell-tale light inoperative.	Check body fuse. Check bulb.	Repair or replace as needed.
System operates normally except alarm will not activate when hood opened.	Open in hood switch wire. Inoperative hood switch. Malfunctioning controller.	Repair or replace as needed. Same as above. Replace after investigating previously listed causes.
System operates normally except does not disarm with door key.	A. Try to disarm system by opening other door lock with key. If system disarms, check for: 1. Open light green wire. 2. Malfunctioning door lock switch.	 Repair or replace as needed. Same as above.
	B. If system cannot be disarmed from either door: 1. Check for open at 18 red wire at controller with door lock cylinder in unlock position.	Repair or replace as needed.
Security light will not go out upon closing doors, and system will not arm.	LOCK CYLINDER VIOLATED or unwanted ground at door jamb switches, door and trunk tamper switches or pinched wires leading to these components. Door and trunk lock tamper switches out of adjustment.	Repair or replace as needed. Readjust or replace as necessary.
Alarm activates when depressing door lock button when equipped with illuminated lock cylinder option.	Unwanted ground at door jamb switch.	Remove wires from door jamb switch and install wires so that illuminated lock cylinder feed (18 white) is separated from theft deterrent wiring (18 blue).
Alarm activates by itself.	Check for too close adjustment of hood and door jamb switches.	Readjust or replace as necessary.
System cannot be armed - tell-tale O.K.	Check for ground at #18 red wire at controller.	Repair or replace as needed.
Drivers door only will not generate alarm.	Open diode in dash harness. (See Fig. 15-7.)	Replace diode.
Key buzzer activated by all doors.	Diode shorted.	Replace diode.

1. Controller

a. Removal

1. Unlock door with key.
2. Disconnect negative battery cable.
3. Remove instrument panel pad assembly.
4. Disconnect controller wiring connectors from wiring harness connectors, located just above radio receiver.

(NOTE: Controller is located beneath the shroud panel reinforcement support.)

5. Remove mounting screw securing controller and mounting bracket to reinforcement support and remove controller.

(NOTE: No repairs can be made to the controller. If inoperative, it must be replaced.)

b. Installation

1. Position controller and mounting bracket and secure with one screw.
2. Connect controller wiring connectors to wiring harness connectors.
3. Install instrument panel pad assembly and connect battery cable.
4. Remain in vehicle and lower left front window.
5. Remove ignition key, open door, lock door with electric door lock switch, exit vehicle and close door. Lift manual door locking button and open door. Alarm should activate. To stop alarm, insert key in door lock and turn to "Unlock" position.

2. Hood Sensing Switch

a. Removal

1. Open hood.
2. Reach under left hand side of radiator cradle tie bar and disconnect wiring from sensing switch.
3. Remove nut securing switch to tie-bar and remove switch.

b. Installation

1. Position switch through tie bar and secure with nut.
2. Reach under tie bar and connect wiring to switch.
3. Close hood.
4. With door and window open, move electric door lock switch to "Lock" position and close door.
5. Check system by opening hood.

c. Switch Adjustment

(NOTE: Make certain that hood is properly aligned and hood primary and secondary latches are properly adjusted.)

1. Exert upward pressure at left front corner of locked hood.
2. If alarm sounds, remove switch, adjust upward and shim with washer(s) as required.
3. Lower hood and re-arm system. Repeat Steps 1 and 2. Alarm should not sound.
4. Pull hood release cable; alarm should sound. If alarm does not sound, stretch hood pop-up spring to raise hood fully to secondary latch position.

FUEL MONITOR SYSTEM
LOW FUEL LEVEL WARNING INDICATOR

The Low Fuel Level Warning Indicator is an optional accessory on all series cars and is mounted in the fuel gage, Fig. 15-8. A red light emitting diode next to the "E" empty mark on the gage will glow when the fuel level in the tank is low. The light glows more brightly as the fuel level drops further.

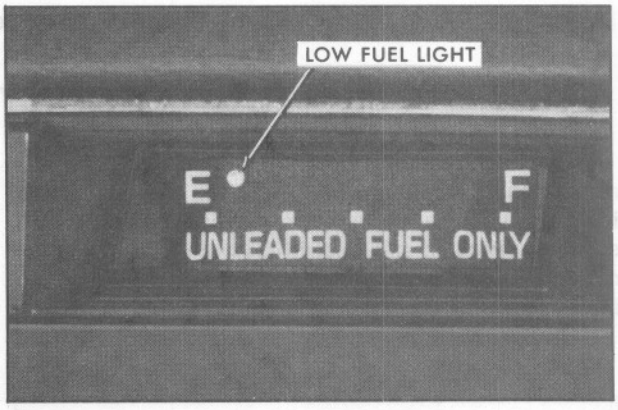


Fig. 15-8 Low Fuel Level Warning Indicator

DIAGNOSIS

Diode Test

This test is designed as an on-car check using a non-powered test light.

1. Turn ignition switch to "On" position.
2. Pull down on fuel filler door and disconnect tan wire connector from body end panel connector, Fig. 15-9.
3. Connect one lead of test light to terminal in end panel connector and other end to rear bumper (ground). Test lamp should light, fuel gage needle should drop to "E" mark and low fuel diode light should glow. If so, system is operating normally. Remove test light, join connectors together and turn ignition off. See Electrical Instrument Diagnosis in Section 12 for inoperative fuel tank unit.
4. If test does not operate as described above, re-connect test light for proper ground and retest.
5. If only test light operates without pointer going to "E", fuel gage is inoperative. If pointer goes to "E" and diode does not light, diode or low fuel mylar within gage unit is inoperative. See electrical instruments diagnosis in Section 12 of the 1974 Shop Manual.

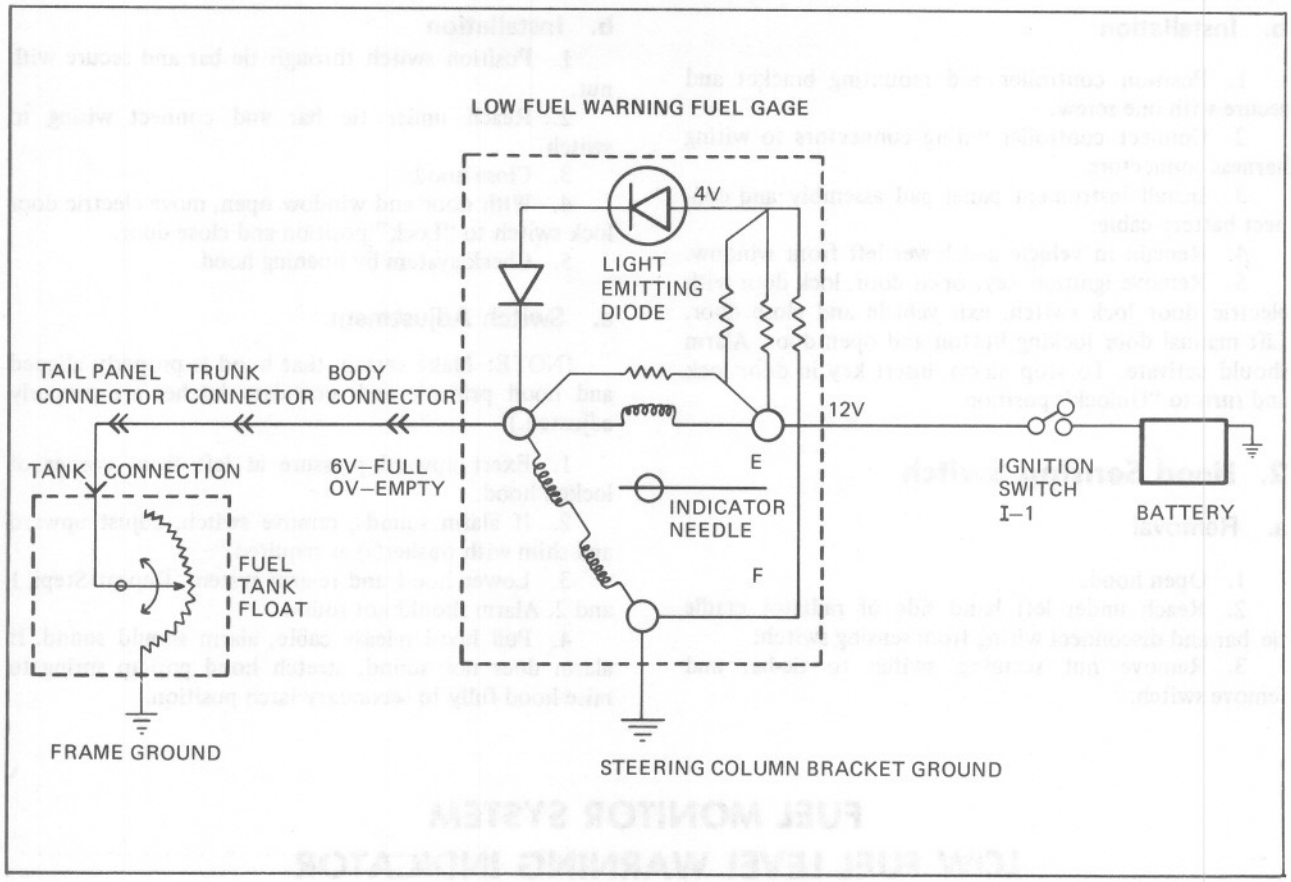


Fig. 15-9 Low Fuel Level Circuit Diagram

FUEL ECONOMY INDICATOR SYSTEM

The Fuel Economy Indicator System, Fig. 15-10, is an optional accessory using, a green and an amber indicator light in the accessory telltale panel, a fuel economy (vacuum and electrical) switch mounted at the center bulkhead connector Fig. 15-11, and an inter-connecting vacuum hose and tee.

On light throttle acceleration and cruising, the green indicator light glows to denote relatively economical fuel consumption. On heavy acceleration, the amber indicator light glows to denote relatively high consumption of fuel. The amber indicator will also glow when the ignition is turned "On" with the engine stopped.

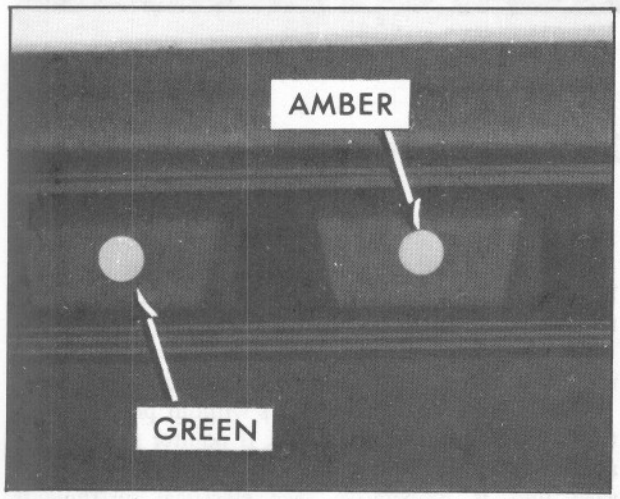


Fig. 15-10 Fuel Economy Indicator Lights

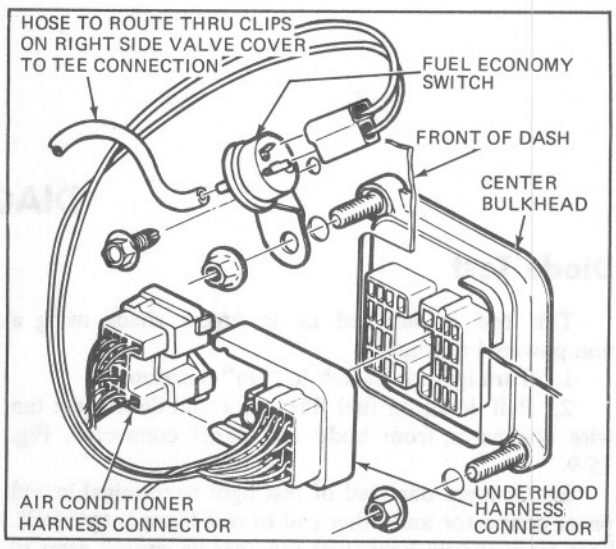


Fig. 15-11 Fuel Economy Indicator Components

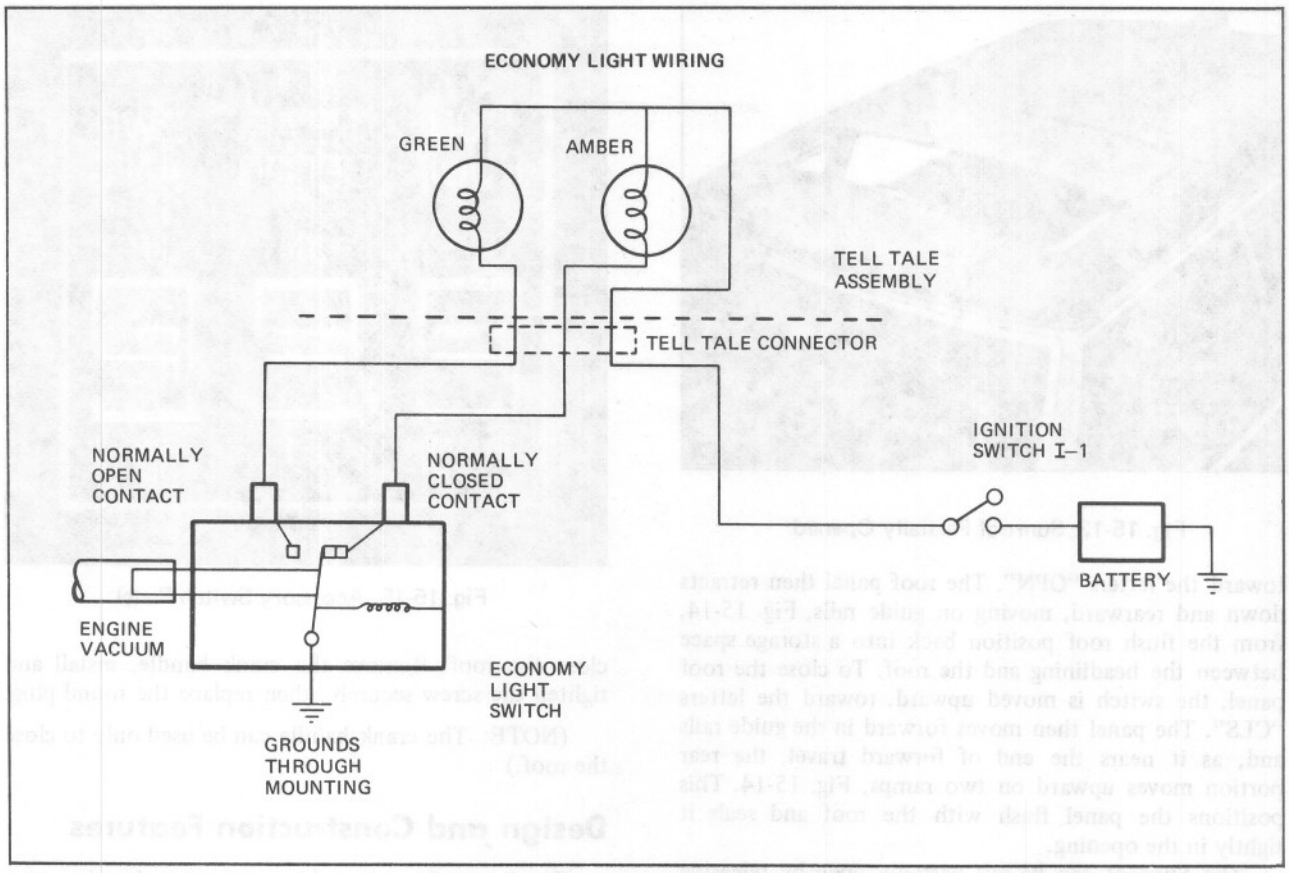


Fig. 15-12 Fuel Economy Indicator System Circuit Diagram

A dual contact, manifold vacuum sensing switch lights the proper indicator, to agree with the amount of fuel being used. Both indicators will not light during the transition from one color to another, Fig. 15-12.

DIAGNOSIS

Functional Test

1. Turn ignition switch to "On" position and ground each terminal at economy switch. Both amber and green indicators should glow. If not, check for burned out or missing indicator bulbs.

2. Turn ignition switch to "On" position; amber indicator should glow. If not, check for loose or disconnected wires at fuel economy switch or poor ground. If none of the above correct operation, replace switch.

3. Start engine and allow to idle. Green indicator should glow. If it does not glow, check for a plugged, kinked or leaking vacuum hose between fuel economy switch and tee at right rocker cover. Check for loose or disconnected wires at fuel economy switch or poor ground. If none of the above correct operation, replace switch.

4. Tool J-23738 hand operated vacuum pump may be used to check the vacuum switch without running the engine.

SUNROOF

An electrically-operated motor-driven Sunroof, Figs. 15-13 and 15-14 is available as an optional feature on all cars except the limousine and commercial chassis. The Sunroof permits opening of a sliding roof panel to admit sunshine and outside air into the passenger compartment.

Operation

The Sunroof is operated by a two-position switch labeled "SUN ROOF", Fig. 15-15, located in the accessory switch panel. To open roof panel, with ignition ON, the control switch is moved downward

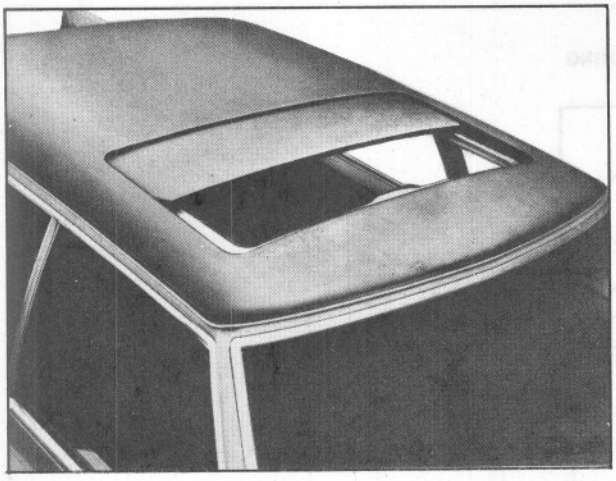


Fig. 15-13 Sunroof Partially Opened

toward the letters "OPN". The roof panel then retracts down and rearward, moving on guide rails, Fig. 15-14, from the flush roof position back into a storage space between the headlining and the roof. To close the roof panel, the switch is moved upward, toward the letters "CLS". The panel then moves forward in the guide rails and, as it nears the end of forward travel, the rear portion moves upward on two ramps, Fig. 15-14. This positions the panel flush with the roof and seals it tightly in the opening.

The Sunroof can be left partially open by releasing the control switch at any position in either direction of its travel.

Manual Operation

The Sunroof can be closed manually in the event it should fail to close when the control switch is moved to the "CLS" position. To do this, remove the small round plug located in the center of the headlining near the front edge of the roof opening to gain access to the winding gear. Remove the plug by grasping with fingers and pulling outward, Fig. 15-16. Remove the screw (visible when plug is removed) using hex end of crank handle provided in glove box.

The threaded end of crank handle is screwed into the winding gear, Fig. 15-17. Turn crank handle clockwise to close the roof. Remove the crank handle, install and tighten the screw securely, then replace the round plug.

(NOTE: The crank handle can be used only to close the roof.)

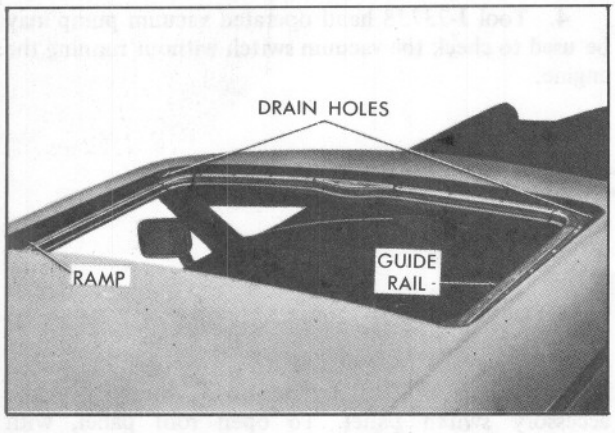


Fig. 15-14 Sunroof Fully Opened

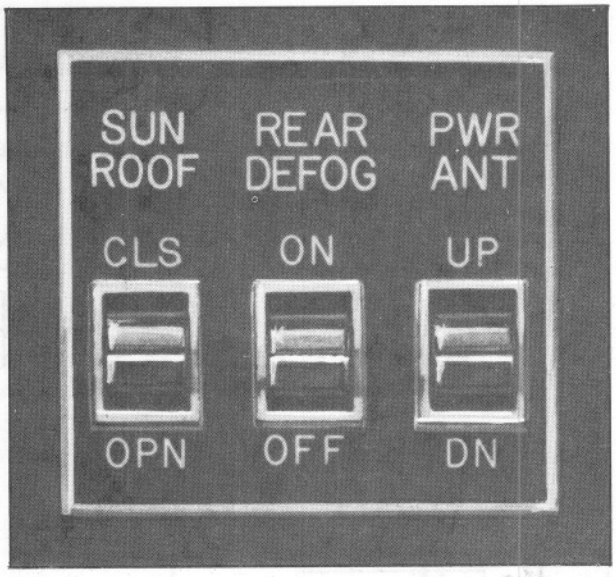


Fig. 15-15 Accessory Switch Panel

Design and Construction Features

The Sunroof is actuated by a two-way electric motor mounted near the center of the windshield header area, Fig. 15-18. The motor drives an auxiliary unit with a gear on the output shaft. This gear, in turn, drives two flexible gear cables that are attached to the roof panel and control its movement, Fig. 15-19.

Four plastic drain tubes, two on each side, are incorporated in the windshield pillar area and in the rear quarter area to catch water seepage that may bypass the weatherstrip seal around the roof opening. The two forward tubes, Fig. 15-15, are routed from the roof panel trough down through the right and left windshield pillars, and out through the rocker panels. The rear drain tubes are routed through the rear quarter panel and drain through the rear wheel housings.

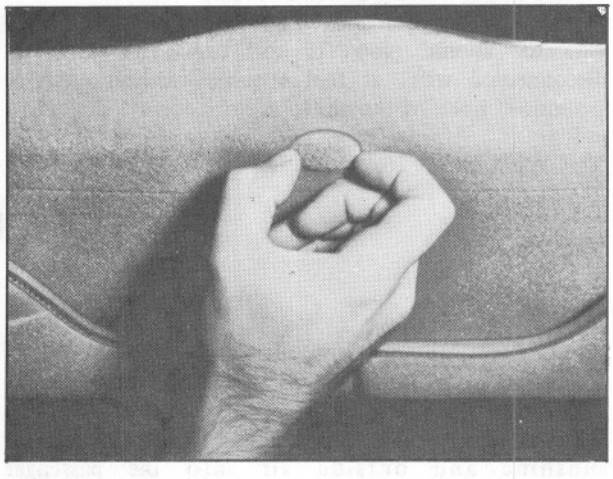


Fig. 15-16 Removing Winding Gear Access Plug

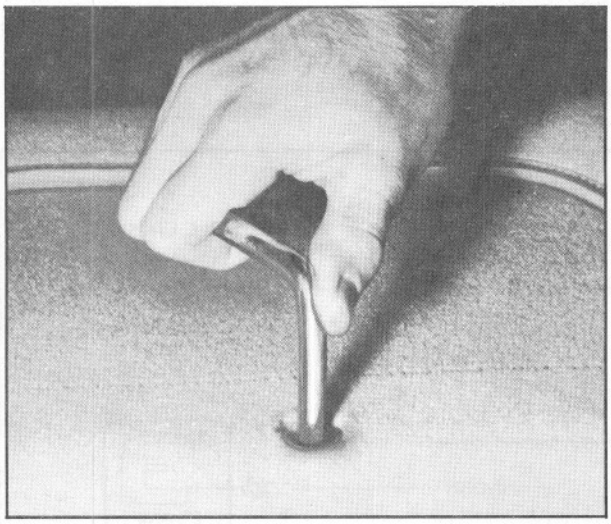


Fig. 15-17 Closing Sunroof with Crank Handle

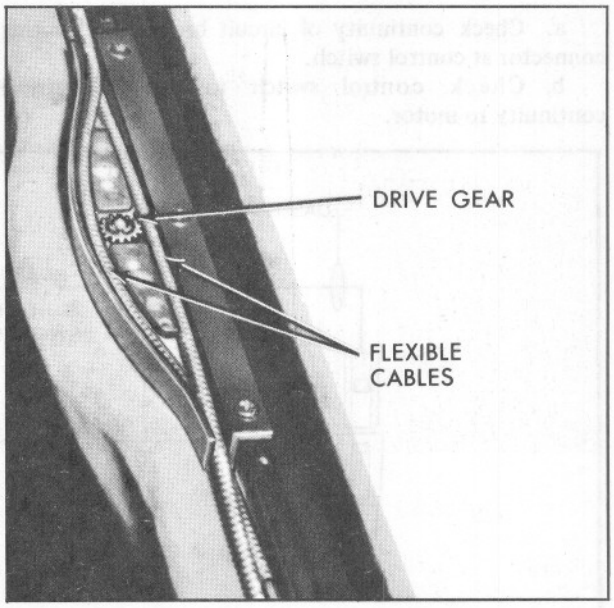


Fig. 15-19 Drive Gear And Cables

Electrical System

The electrical circuit for the sunroof is protected by a 25-amp circuit breaker on the left hand instrument panel brace underneath the instrument panel pad.

Electrical power for the system, Fig. 15-19, is supplied from the fuse block through an orange wire to the 25-amp circuit breaker. Another orange wire is routed from the circuit breaker to a four-way connector that leads to the control switch on the instrument panel. An orange feed wire leads to the switch. Two wires – black for the open cycle and light green for the close cycle – are routed from the switch to the motor.

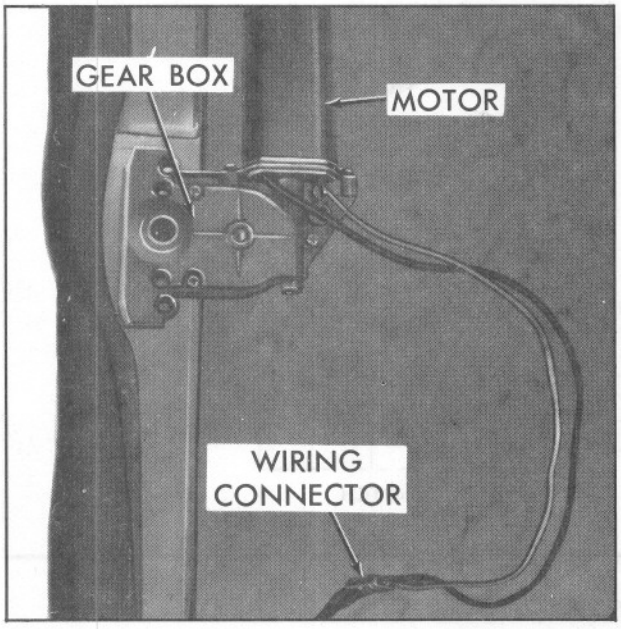


Fig. 15-18 Motor And Drive Unit Location

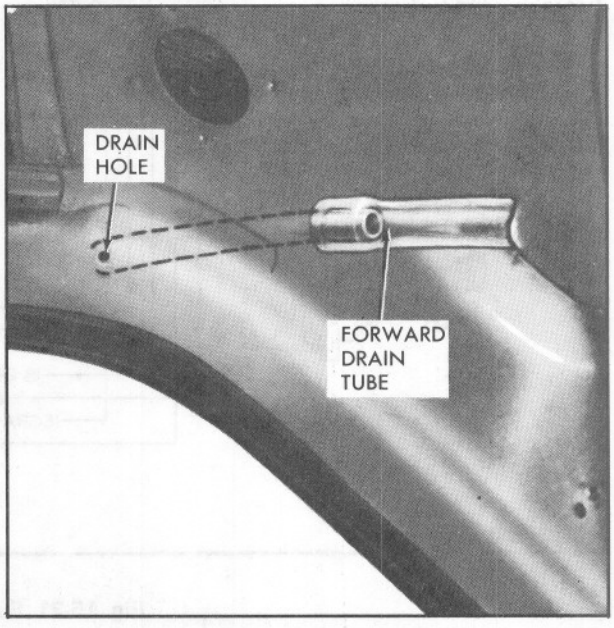


Fig. 15-20 Forward Drain Tube Left Side

DIAGNOSIS

Diagnosis of Inoperative Panel

1. Motor runs, panel fails to rise.

a. Panel does not run due to mechanical resistance, see Note 4d. Panel Does Not Run True, and Note 4e, Cable Guide Alignment. Drive cables may be disconnected or broken.

b. Front slides are tilted and require alignment; see Note 4c, Ramp Alignment.

2. Motor Fails to Run (Fig. 15-21).

a. Check continuity of circuit breaker and wiring connector at control switch.

b. Check control switch to assure electrical continuity to motor.

c. Check wiring and connections to motor. Check motor ground wire.

d. Replace motor.

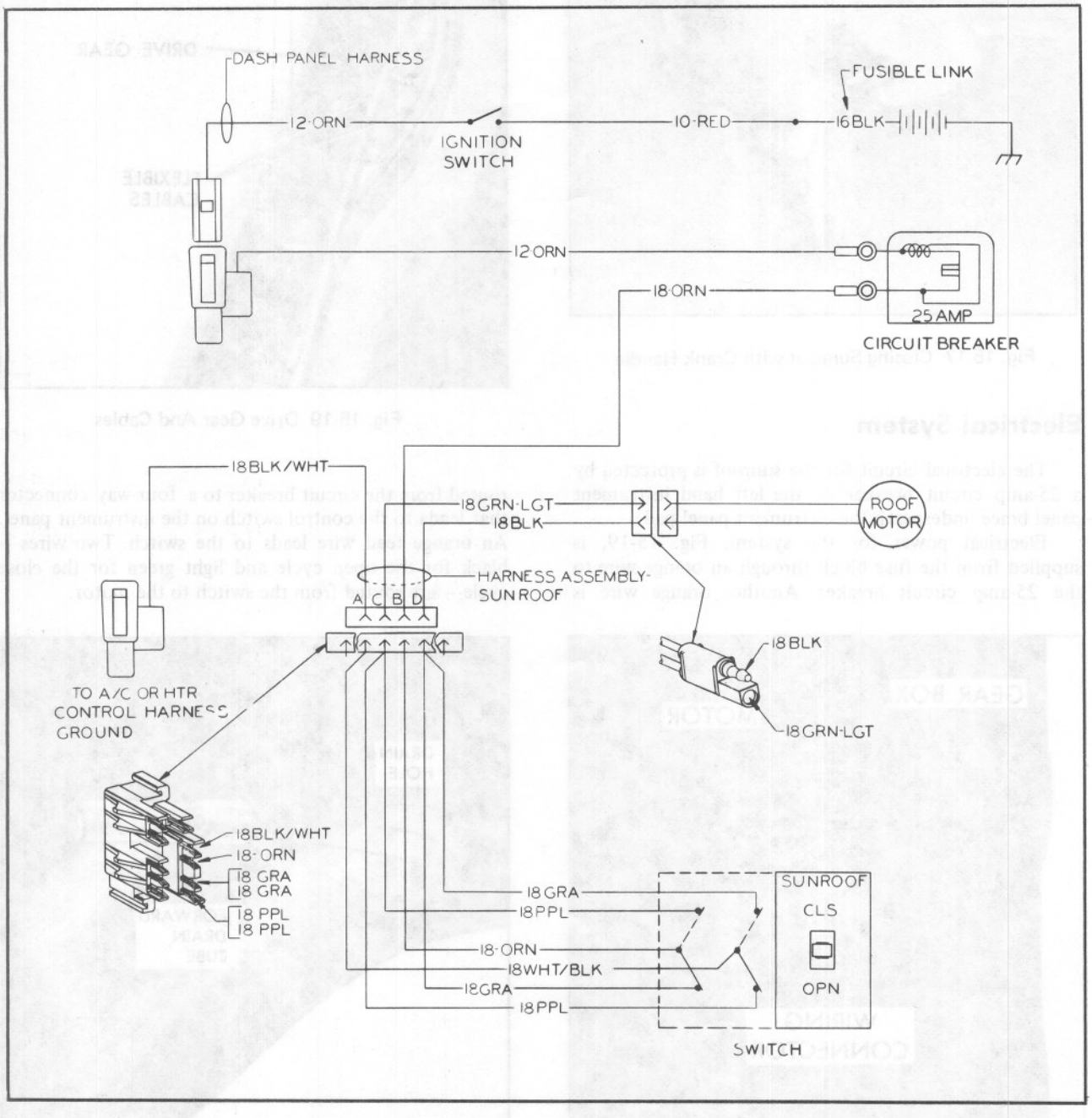


Fig. 15-21 Sunroof Circuit Diagram

SERVICE INFORMATION

3. Headlining Panel

a. Removal

1. Open roof panel slightly.
2. Unsnap forward portion of headlining panel by gently prying downward. Fig. 15-22.
3. Open roof panel further to within three inches of full open position, to permit rear of headlining frame to fall clear of roof panel rear hooks.
4. Grasp headlining panel front edge and pull it forward and out of side guide rail lower tracks.

b. Installation

1. Retract roof panel to full open position.

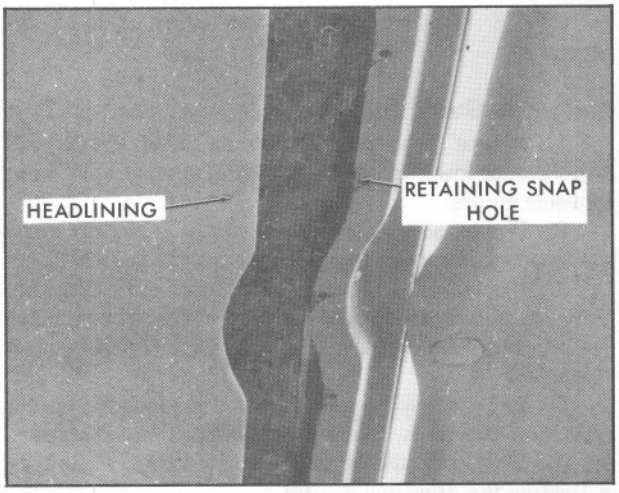


Fig. 15-22 Headlining Panel Removal

2. Align headlining panel with side guide rail lower tracks and move rearward into proper position.

3. Close roof panel part way, leaving it open approximately three inches.

4. Position headlining snaps to holes in panel and tap into place with heel of hand. Fig. 15-23.

4. Adjustments and Related Repairs

a. Panel Alignment, Front Left or Right

1. To obtain a flush fit with the roof on one side of front of roof panel, loosen both front slide screws, Fig. 15-19.

2. Turn knurled adjuster nut counterclockwise to raise roof panel and clockwise to lower panel, Fig. 15-24.

3. After proper alignment is obtained, tighten screws.

4. Adjust opposite front slide in same manner if required.

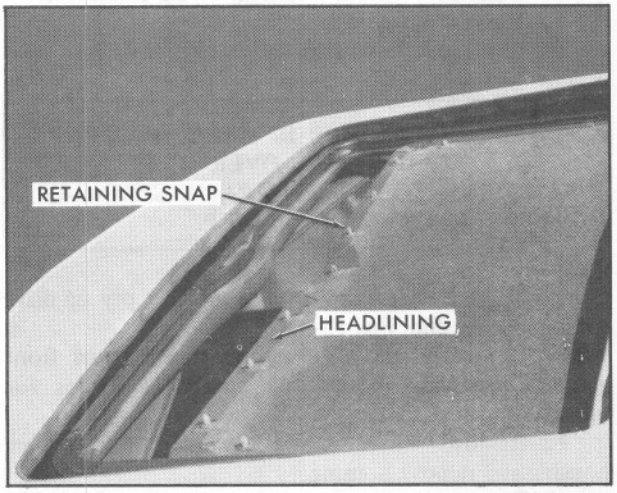


Fig. 15-23 Headlining Snaps

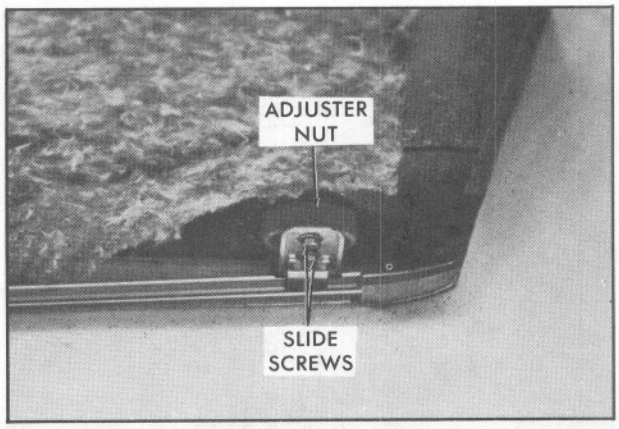


Fig. 15-24 Front Panel Aligment

b. Panel Alignment, Rear Left or Right

1. To obtain a flush fit with the roof on one side of rear of roof panel, loosen 3/8" locknut on rear slide, Fig. 15-25.

2. Slide pin up or down in channel to obtain proper height and tighten lock nut.

3. After proper alignment is obtained, tighten lock nut.

4. Adjust opposite rear slide in same manner, if required.

c. Ramp Alignment

1. If roof panel does not rise into roof opening during closing cycle, remove headlining panel from roof panel and open roof panel to full rearward position.

2. Examine ramps in drainage channel, Fig. 15-14 to determine if they are properly aligned with lifting elements at rear of panel.

(NOTE: The point where lifting element makes contact with ramp can be seen on rearward slope of ramp, Fig. 15-26.)

3. To adjust ramp, loosen both screws, locate ramp in proper position and tighten screws.

4. Close roof panel and note lifting action of panel.

5. If necessary, readjust ramps until proper lifting of roof panel is obtained.

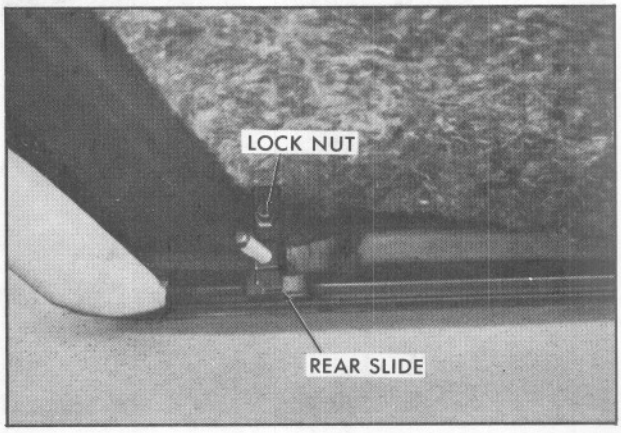


Fig. 15-25 Rear Panel Alignment

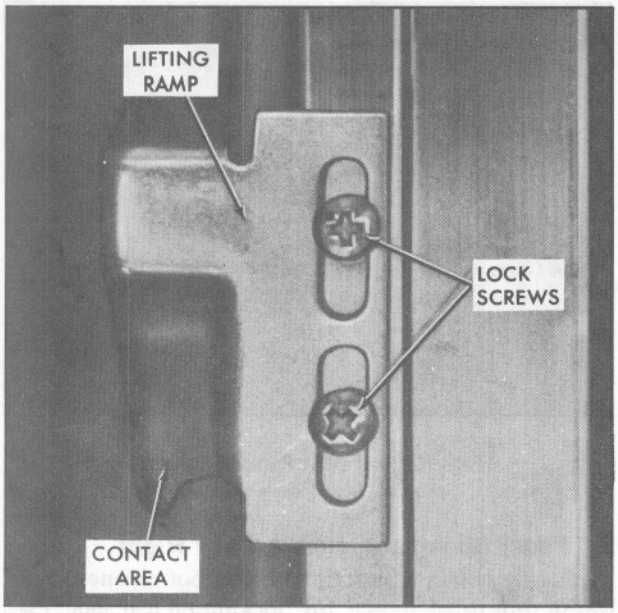


Fig. 26 Lifting Ramp

d. Panel Does Not Run True

1. Close roof panel to determine which side of panel jams.

WARNING: THE CLIP IS MADE OF SPRING STEEL. HOLD HAND OVER CLIP WHEN REMOVING TO PREVENT RAPID SPRING-UP WHEN PERFORMING THIS STEP.

2. Open roof panel, remove drive housing center cover and pry off drive cable retaining clip, Fig. 15-27.
3. To move right hand side of roof panel forward, lift right cable at front of pinion and pull it one or more teeth to the left.
4. Install retaining clip and drive housing cover and check operation.
5. To move left hand side of roof panel forward, perform similar operation on left cable.

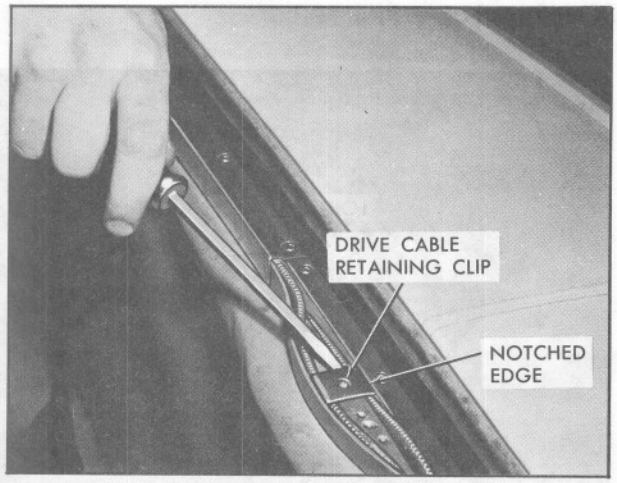


Fig. 15-27 Removing Drive Cable Retaining Clip

(NOTE: Do not move panel while cable is off pinion.)

e. Cable Guide Alignment

1. If roof panel jams during its travel, check both front corner lower elbow guides for alignment with front and side guides.
2. If necessary, shim lower elbow guides to move guides inboard for alignment with adjacent guides.
3. If panel fails to rise, the joints of cable slides are out of alignment (guide rail, corner and connector guides, and cable drive housing) and are jamming cable drive.

a. Loosen screws retaining the guide rails, corner and connector rails, and cable drive housing a few turns.

b. Retighten the screws one by one, continually activating the drive mechanism.

c. Where necessary, realign those points where resistance is felt.

5. Sunroof Switch Removal and Installation

The procedure for removing and installing the accessory switch panel is described in Section 12.

6. Motor and Gear Box Assembly

a. Removal

1. Open Sunroof to three-quarter full open position.
2. Disconnect negative battery cable.
3. Remove left and right windshield side garnish moldings, roof side rail garnish moldings, both sun visor assemblies, and center sun visor bracket.
4. Remove left and right windshield upper garnish moldings.
5. Carefully pull headlining from front roof inner panel at top of windshield area sufficiently to gain access to Sunroof motor and gear box assembly, Fig. 15-18.
6. Remove foam insulator padding in front of roof panel opening adjacent to motor and gear box assembly.
7. Disconnect motor electrical wiring connector.
8. Remove drive cable housing cover, Fig. 15-28.
9. Remove left and right elbow corner guides.

WARNING: THE CLIP IS MADE OF SPRING STEEL. HOLD HAND OVER CLIP WHEN REMOVING TO PREVENT RAPID SPRING-UP WHEN PERFORMING THIS STEP.

10. Using a small screwdriver, carefully pry up drive cable retaining clip, Fig. 15-27.
11. Pull drive cables out of upper and lower front guides, observing routing of cables in guides for installation purposes.
12. Remove three screws retaining drive cable housing and remove housing.
13. From top area, remove two gear box assembly retaining screws and remove gear box assembly with motor.

Fig. 15-28 Removing Drive Cable Housing Cover

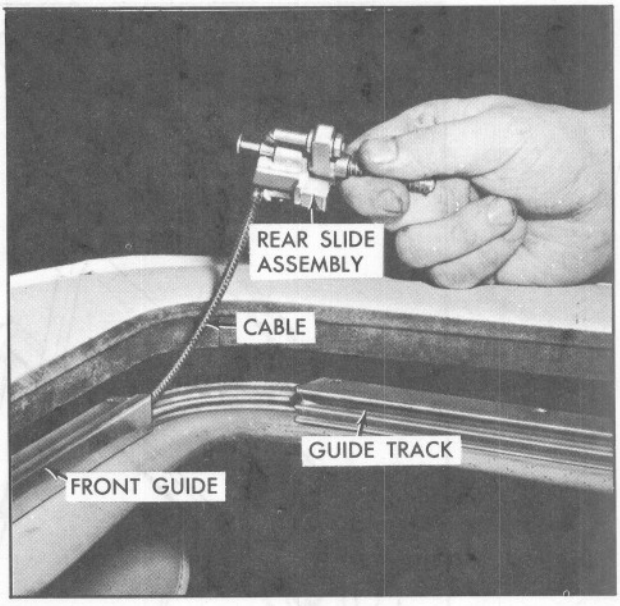


Fig. 15-29 Removing Rear Slide And Cable

b. Installation

1. Position motor and gear box assembly in drive cable housing.
2. Install two retaining screws.
3. Install drive cable housing with three retaining screws.
4. Insert ends of cables into guides, observing same cable routing as when removed. Lubricate cables and drive gear with #70 grade lubriplate or equivalent.
5. Install right and left elbow corner guides.

(NOTE: Alignment of lower elbow corner guide is of utmost importance.)

6. Install cable retaining clip by pressing down firmly with thumb.
7. Install drive cable housing cover.
8. Connect motor electrical wiring connector and battery cable, and check operation of system.
9. Apply cement to foam insulation padding and install padding.
10. Apply trim cement sparingly to forward edge of roof panel. Starting at center, position headlining to front roof inner panel forward edge. Smooth out all wrinkles, working from center to outboard ends.
11. Install roof side rail garnish moldings, windshield upper and side garnish moldings, center sun visor bracket, and sun visors.

CAUTION: *Be careful not to pinch drain tubes when installing windshield side garnish moldings.*

12. Close Sunroof.

7. Sunroof Panel, Rear Slide, and Cable (Fig. 15-30 and 15-31)

a. Sunroof Panel Removal

1. Open roof panel slightly.
2. Unsnap forward portion of headlining panel by gently prying downward.
3. Open roof panel further to within three inches of full open position, to permit rear of headlining frame to fall clear of roof panel rear hooks.
4. Grasp headlining panel front edge and pull it forward and out of side guide rail lower tracks.
5. Close roof and push headlining panel to full rearward position.
6. Remove outboard screw from each front slide assembly, Fig. 15-32.
7. Loosen inboard slide screw and rotate each front slide assembly inboard to clear guide rail, Fig. 15-33.
8. Pull each rear slide and cable assembly inboard and out of slide retainer hole in roof panel, Fig. 15-34.
9. Lift roof panel at front edge and pull panel forward and out of roof opening.

b. Rear Slide and Cable Removal

(NOTE: If only one cable is defective, replace both. This assures parallel travel of roof panel.)

1. Remove drive cable housing cover, Fig. 15-28.
2. Remove both front upper elbow guides.

WARNING: THE CLIP IS MADE OF SPRING STEEL. HOLD HAND OVER CLIP WHEN REMOVING TO PREVENT RAPID SPRING-UP WHEN PERFORMING THIS STEP.

3. Using screwdriver, pry off drive cable retaining clip.
4. Pull free end of one cable out of guide rail and drive housing, and pull cable and rear slide assembly forward to front corner, Fig. 15-35.
5. Remove slide from guide track and pull cable out of front guide, Fig. 15-29.
6. Remove opposite cable in same manner.

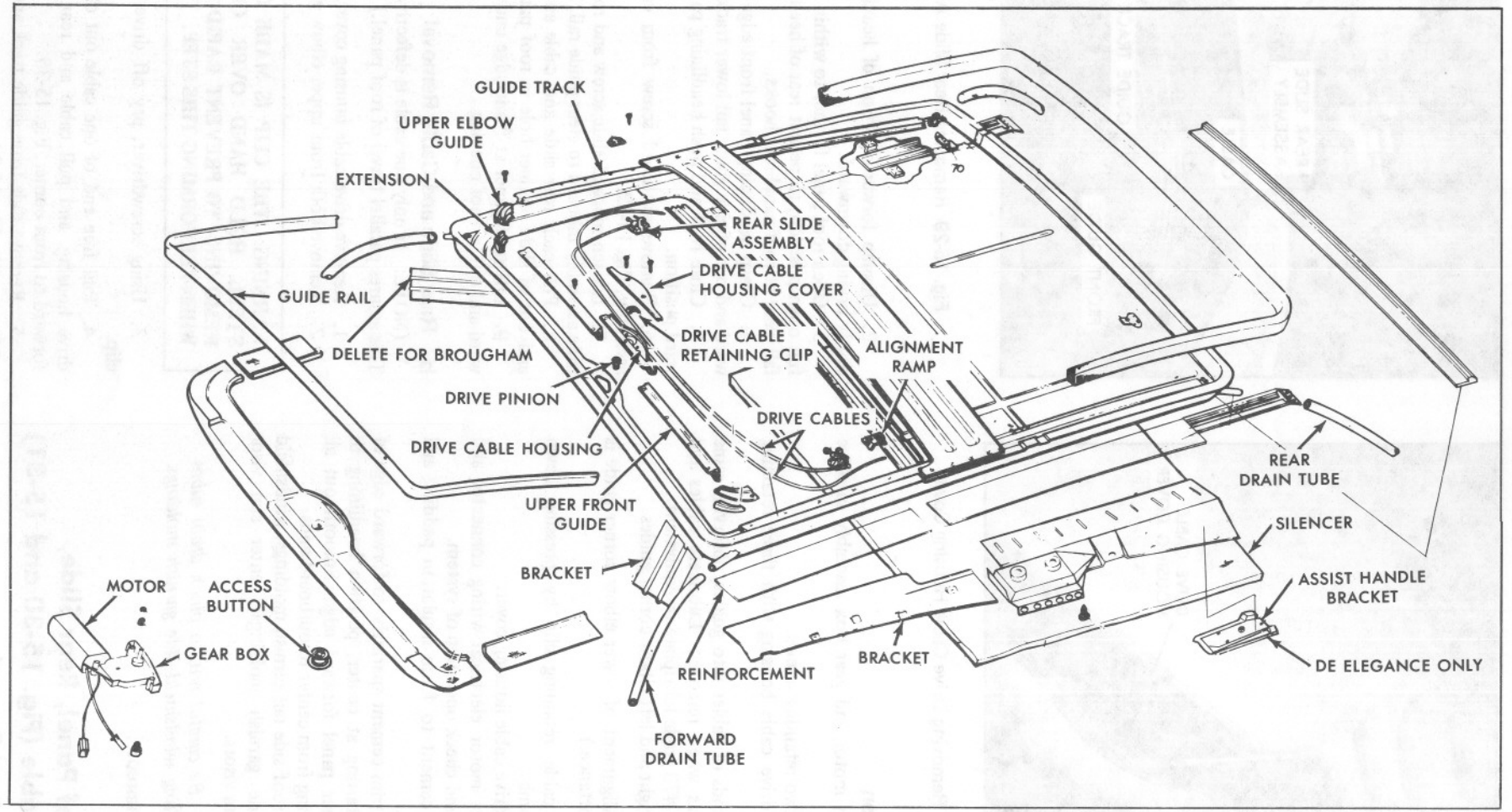


Fig. 15-30 Sunroof Disassembled

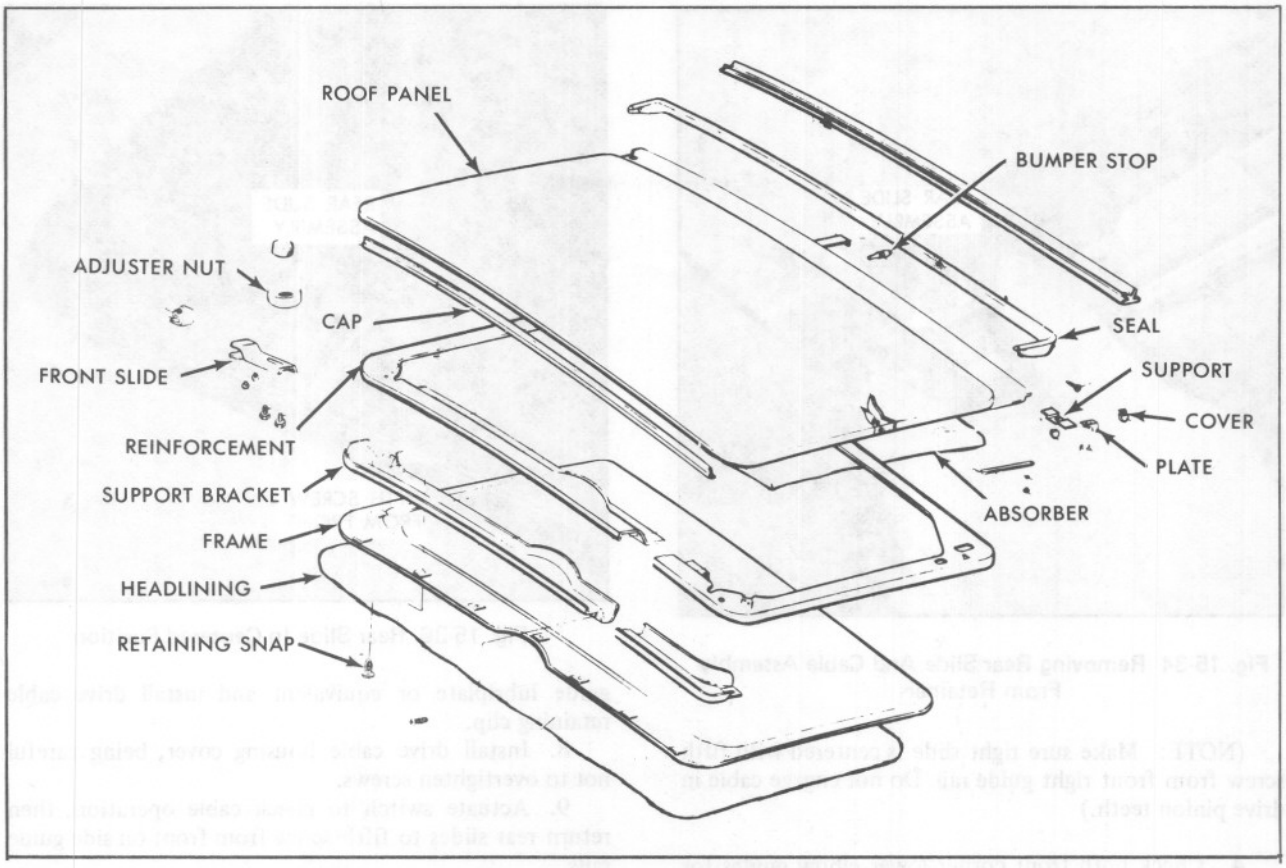


Fig. 15-31 Roof Panel Disassembled

c. Rear Slide and Cable Installation

1. Position left rear slide in guide track and move slide and cable assembly back until slide is centered with the fifth side guide rail screw from the front, Fig. 15-36.

2. Slide free end of cable into upper front guide, Fig. 15-37, and route cable through the curved front center track in drive cable housing and into lower track on right side. Do not engage cable in drive pinion teeth, Fig. 15-38.

3. Install right slide and cable assembly in same manner as left slide and cable assembly, except that right cable is routed in straight center track in drive cable housing and into lower track on left side, Fig. 15-32.

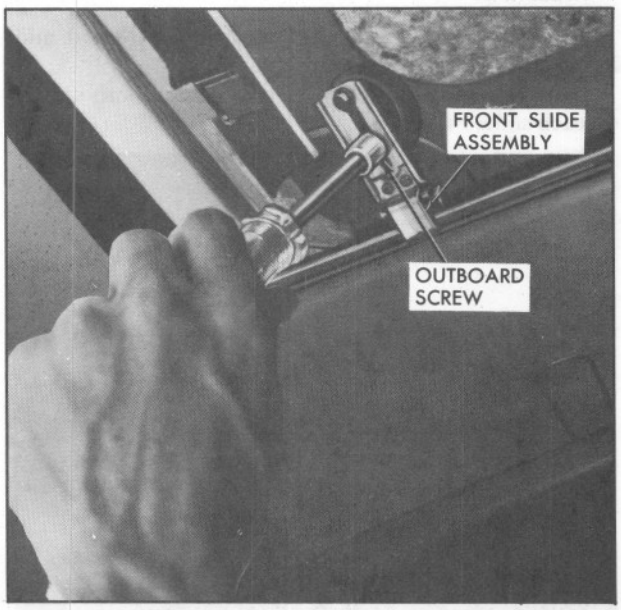


Fig. 15-32 Removing Outboard Screw From Front Slide Assembly

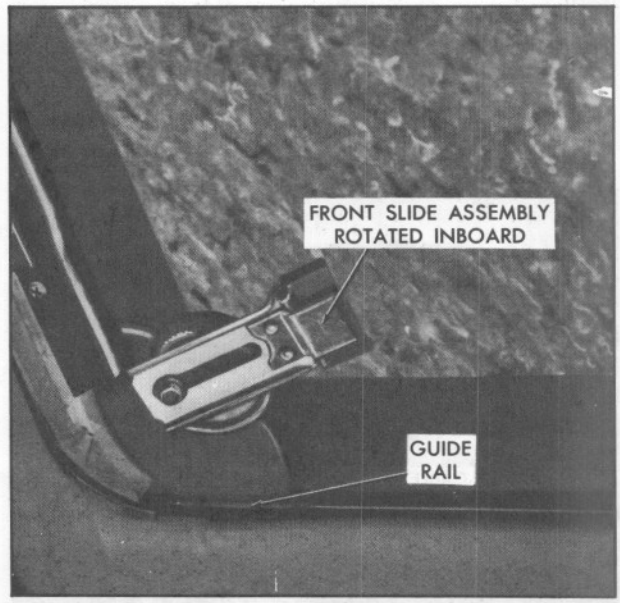


Fig. 15-33 Front Slide Assembly Clear Of Guide Rail

Fig. 15-34 Removing Rear Slide And Cable Assembly From Retainer

(NOTE: Make sure right slide is centered with fifth screw from front right guide rail. Do not engage cable in drive pinion teeth.)

4. Check both front corner lower elbow guides for alignment with front and side guides. If necessary, shim lower elbow guide to move guide inboard for alignment with adjacent guides.

5. Lubricate cables at the areas of the elbow guides with #70 grade lubriplate or equivalent and install both front corner upper elbow guides.

6. Recheck rear slides for center position with fifth screw from front on side guide rails, Fig. 15-37. With slides in this position, engage cables in drive pinion teeth.

CAUTION: *This operation is critical to assure roof panel alignment and prevent cable breakage.*

7. Lubricate cables and drive pinion teeth with #70 grade lubriplate or equivalent and install drive cable retaining clip.

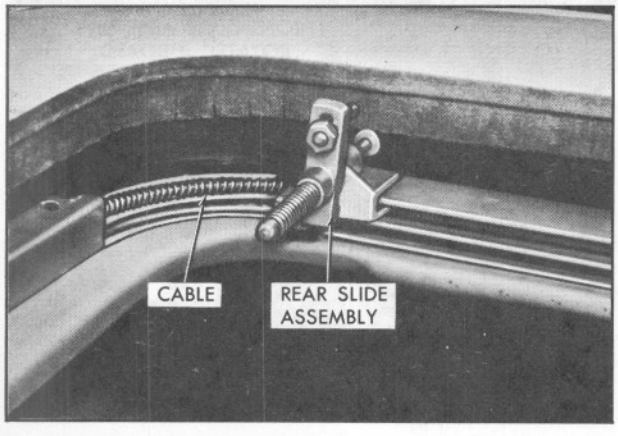


Fig. 15-35 Cable And Slide Assembly Pulled Forward

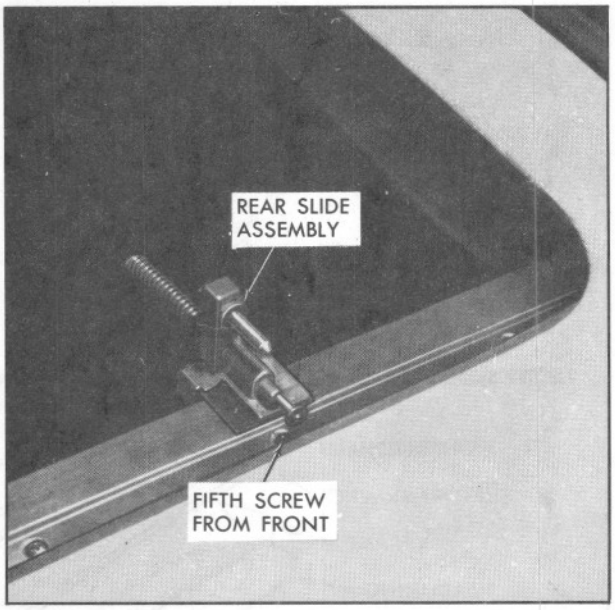


Fig. 15-36 Rear Slide In Centered Position

8. Install drive cable housing cover, being careful not to overtighten screws.

9. Actuate switch to check cable operation, then return rear slides to fifth screw from front on side guide rails.

d. Roof Panel Installation

1. With headlining panel in full rearward position, install roof panel into roof opening.

CAUTION: *Hold roof panel in a nearly horizontal position when placing panel into roof opening to assure that stop on center rear edge of roof panel does not damage passenger compartment headlining.*

2. Move each front slide assembly outboard and install slides on guide rail upper tracks.

3. Install outboard screws and tighten both screws on each slide, Fig. 15-24.

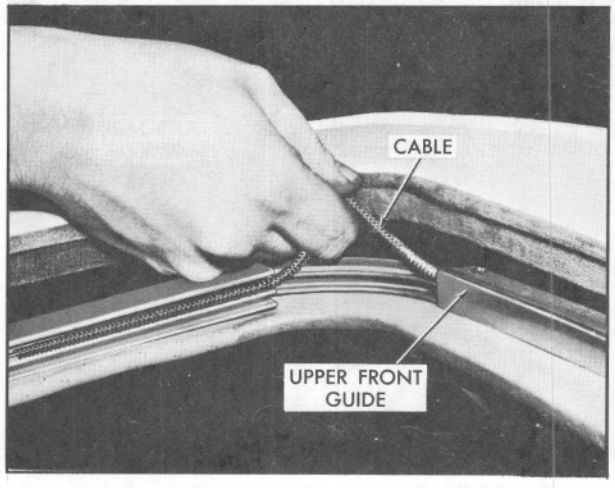


Fig. 15-37 Installing Cable Into Upper Front Guide

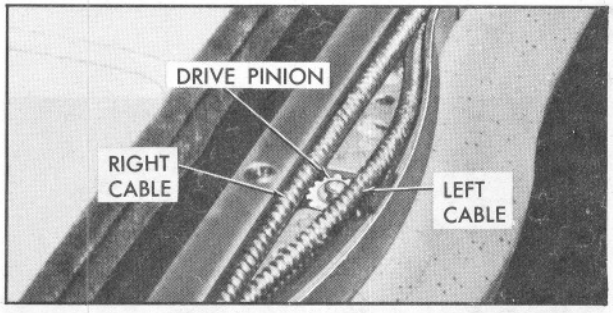


Fig. 15-38 Drive Cables Installed

4. Push roof panel to full forward position by hand.
5. Lift rear of roof panel upward and actuate control switch to position rear slides into alignment with holes on slide retainers on roof panel, Fig. 15-34.
6. Engage each rear slide pin into retainer hole and install retainer spring plate on slide pin.
7. Actuate switch, check operation of roof panel, and note fit of panel to roof. If any adjustments are necessary, refer to Note 4.
8. Install headlining on roof panel.

8. Drain Hose Replacement

a. Front Drain Hose

1. Perform Steps 3, 4, and 5, in Note 6a, and carefully pull headlining away from top of windshield area sufficiently to gain access to either front drain hose, Fig. 15-20.
2. Remove kick pad trim panel.
3. Remove hose from drain tube outlet at top.

(NOTE: Adhesive is used to secure hose to outlet.)

4. Using a piece of flexible wire or cord, attach new hose to lower end of old hose and pull new hose into position while removing old hose.
5. Secure new hose to drain tube outlet with weatherstrip adhesive.
6. Install headlining, garnish moldings, sun visors, and bracket as described in Note 6b, Steps 11 and 12.

b. Rear Drain Hose

1. Pull down headlining at rear corner to gain access to hose.
2. Remove hose from drain tube outlet at top.
3. Using a piece of flexible wire or cord, attach new hose to lower end of old hose and pull new hose into position while removing old hose.

9. Weatherstrip Replacement

a. Removal

1. With Sunroof panel closed, mark joint of roof opening weatherstrip rear edge and roof panel weatherstrip front edge on both the roof panel and roof at both sides of vehicle.
2. Remove roof panel assembly from vehicle, as described in Note 7a.
3. Remove weatherstrips from roof panel opening and from rear edge of roof panel.

b. Installation

1. Clean surfaces using a suitable cement solvent.
2. Apply weatherstrip cement to both surfaces.
3. Position roof opening weatherstrip slightly below flush of roof and align one end of weatherstrip with mark on roof assembly. Cement weatherstrip to roof opening.
4. Install weatherstrip on rear edge of roof panel in same manner as roof opening weatherstrip described in Step 3.

(NOTE: Roof panel weatherstrip is also retained with trim nails.)

5. Install roof panel assembly into roof opening, as described in Note 7b.

10. Periodic Maintenance

a. Lubrication

1. During cable replacement, lubricate cables with #70 grade lubriplate or equivalent.
2. Periodically clean off any dirt that may have accumulated on guide rail covers.

CAUTION: *Do not lubricate top surface of guide rail covers as this will cause streaks on headlining material.*

b. Drain Tubes

1. During regular maintenance, check the two drain holes at the front corners of the roof panel, Fig. 15-13 to make certain they are open and free of foreign material. If drains are plugged, they can be cleaned with an air hose or flexible wire. If they cannot be cleaned in this manner, they must be replaced.
2. To clean rear drain tubes, use an air hose or flexible wire from the bottom of the tubes.

ASTROROOF

The Astroroof, Fig. 15-39, consists of a specially treated safety glass panel that allows skylight to enter the passenger compartment. It is equipped with a sliding sunshade that can be closed to block out light. The sunshade is moved by pulling or pushing the handle to obtain the desired settings. To completely close the shade, push its forward edge into the groove at the front of the roof.

The Astroroof incorporates an electrically operated sliding panel that can be opened to admit outside air and light. The sliding panel is operated by a switch in the instrument panel.

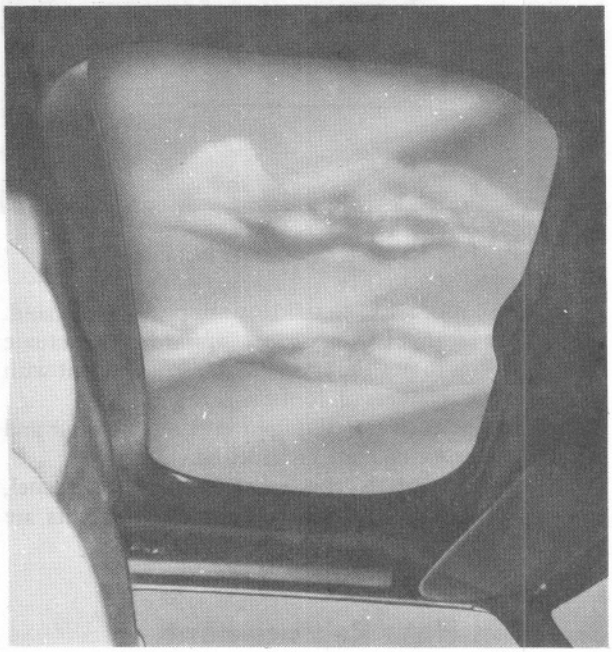


Fig. 15-39 Astroroof

DIAGNOSIS

Water Leaks

A water leak occuring in the area of the halo molding is usually caused by an inadequate seal between the Astro roof glass and the metal frame. The metal frame and glass are hermetically sealed. To correct a leak between the metal frame and the glass, remove the roof panel from the car. Use a clear auto glass silicone sealer and apply a bead around the edge of the metal frame.

(NOTE: Do not attempt to pry the metal frame away from the glass to apply the sealer, as this could result in glass breakage.)

SERVICE INFORMATION

(NOTE: For additional service information, refer to the section about the sunroof.)

11. Halo Molding

(NOTE: To perform adjustments or repairs on an Astroroof, it is necessary to remove the halo molding.)

a. Removal

1. Slide sunshade all the way open.
2. Open roof to halfway position.
3. Remove three screws from front of halo molding.
4. Close roof to within three inches of the fully closed position.
5. Pull the forward center portion of the halo molding downward so the horizontal tabs at the front of the molding are removed from the track.
6. Close roof and slide halo molding forward, pulling downward on the rear center section of the molding to disengage the horizontal slide surface from the track assembly, and remove halo molding.

b. Installation

1. Position rear slide surface of the halo molding into the track assembly pulling downward on the rear center section of the molding to engage the slide surfaces into the track.
2. Slide halo molding to the rear and open the roof panel about halfway.

3. Pull the forward center portion of the molding downward so the horizontal tabs at the front of the molding can be installed into the track.
4. Position halo molding and secure with three attaching screws.
5. Close roof.

12. Sunshade

a. Removal

1. Remove the halo molding as outlined Note 11a.
2. Open roof to full open position.
3. From outside of the car, deflect the sunshade upward in the center to disengage from the track and slide the sunshade forward and out of the car.

b. Installation

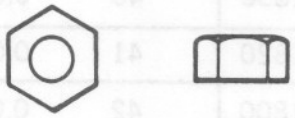
1. From outside of the car, deflect the sunshade upward in the center and engage rear corners into the track.
2. Move the sunshade to the full open position.
3. Close roof panel.
4. Install halo molding as outlined in Note 11b.

BOLT AND NUT IDENTIFICATION

BOLT STEEL CLASSIFICATION

G. M. MATERIAL NO.	HEAD MARKING	STRENGTH
260-M	 (None)	Standard
280-M	 (120°)	Medium
300-M	 (60°)	High

HEX-NUT STEEL CLASSIFICATION

G. M. MATERIAL NO.	MARKING	STRENGTH
Conventional Type		
286-M	 (None)	Standard
301-M	 USUAL (120°)	High
	 OPTIONAL (120°)	
Prevailing Lock Type (Stover)		
A	 (None)	Standard
B	 (120°)	Medium
C	 (60°)	High

DRILL SIZES

Letter Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches	Wire Gage Sizes	Drill Diam. Inches
Z	0.413	1	0.2280	28	0.1405	55	0.0520
Y	0.404	2	0.2210	29	0.1360	56	0.0465
X	0.397	3	0.2130	30	0.1285	57	0.0430
W	0.386	4	0.2090	31	0.1200	58	0.0420
V	0.377	5	0.2055	32	0.1160	59	0.0410
U	0.368	6	0.2040	33	0.1130	60	0.0400
T	0.358	7	0.2010	34	0.1110	61	0.0390
S	0.348	8	0.1990	35	0.1100	62	0.0380
R	0.339	9	0.1960	36	0.1065	63	0.0370
Q	0.332	10	0.1935	37	0.1040	64	0.0360
P	0.323	11	0.1910	38	0.1015	65	0.0350
O	0.316	12	0.1890	39	0.0995	66	0.0330
N	0.302	13	0.1850	40	0.0980	67	0.0320
M	0.295	14	0.1820	41	0.0960	68	0.0310
L	0.290	15	0.1800	42	0.0935	69	0.0292
K	0.281	16	0.1770	43	0.0890	70	0.0280
J	0.277	17	0.1730	44	0.0860	71	0.0260
I	0.272	18	0.1695	45	0.0820	72	0.0250
H	0.266	19	0.1660	46	0.0810	73	0.0240
G	0.261	20	0.1610	47	0.0785	74	0.0225
F	0.257	21	0.1590	48	0.0760	75	0.0210
E	0.250	22	0.1570	49	0.0730	76	0.0200
D	0.246	23	0.1540	50	0.0700	77	0.0180
C	0.242	24	0.1520	51	0.0670	78	0.0160
B	0.238	25	0.1495	52	0.0635	79	0.0145
A	0.234	26	0.1470	53	0.0595	80	0.0135
		27	0.1440	54	0.0550		

DECIMAL EQUIVALENTS

1/64	.015625
1/32	.03125
3/64	.046875
1/16	.0625
5/64	.078125
3/32	.09375
7/64	.109375
1/8	.125
9/64	.140625
5/32	.15625
11/64	.171875
3/16	.1875
13/64	.203125
7/32	.21875
15/64	.234375
1/4	.25
17/64	.265625
9/32	.28125
19/64	.296875
5/16	.3125
21/64	.328125
11/32	.34375
23/64	.359375
3/8	.375
25/64	.390625
13/32	.40625
27/64	.421875
7/16	.4375
29/64	.453125
15/32	.46875
31/64	.484375
1/2	.5
33/64	.515625
17/32	.53125
35/64	.546875
9/16	.5625
37/64	.578125
19/32	.59375
39/64	.609375
5/8	.625
41/64	.640625
21/32	.65625
43/64	.671875
11/16	.6875
45/64	.703125
23/32	.71875
47/64	.734375
3/4	.75
49/64	.765625
25/32	.78125
51/64	.796875
13/16	.8125
53/64	.828125
27/32	.84375
55/64	.859375
7/8	.875
57/64	.890625
29/32	.90625
59/64	.921875
15/16	.9375
61/64	.953125
31/32	.96875
63/64	.984375
1	

WEIGHTS AND MEASURES

LINEAR MEASURE

12 inches ..... = 1 foot
3 feet ..... = 1 yard (1 yd.)

AREA MEASURE

144 square inches ..... = 1 square foot
9 square feet ..... = 1 square yard (sq. yd.)

CUBIC MEASURE

1,728 cubic inches ..... = 1 cubic foot
27 cubic feet ..... = 1 cubic yard

LIQUID MEASURE

1 pint ..... = 16 ounces
2 pints ..... = 1 quart (qt.) = 32 ounces
4 quarts ..... = 1 gallon (gal.)
31 1/2 gallons ..... = 1 barrel (bbl.)

COMMON WEIGHT

16 ounces ..... = 1 pound
100 pounds ..... = 1 hundred weight (cwt.)
2000 pounds ..... = 1 ton

METRIC EQUIVALENTS

Length

Centimeter (cm) .	= 0.3937 in.	In.	= 2.5400 cm.
Meter (m)	= 3.2808 ft.	Ft.	= 0.3048 m.
Meter	= 1.0936 yd.	Yd.	= 0.9144 m.
Kilometer (km.) .	= 0.6214 mile	Mile	= 1.6093 km.

Area

Sq. cm.	= 0.1550 sq. in.	Sq. in.	= 6.4516 sq. cm.
Sq. m.	= 10.7639 sq. ft.	Sq. ft.	= 0.0929 sq. m.
Sq. m.	= 1.1960 sq. yd.	Sq. yd.	= 0.8361 sq. m.

Volume

Cu. cm.	= 0.0610 cu. in.	Cu. in.	= 16.3872 cu. cm.
Cu. m.	= 35.3145 cu. ft.	Cu. ft.	= 0.0283 cu. m.
Cu. m.	= 1.3079 cu. yd.	Cu. yd.	= 0.7646 cu. m.

Capacity

Liter (l)	= 61.0250 cu. in.	Cu. in.	= 0.0164 Liter
Liter	= 0.0353 cu. ft.	Cu. ft.	= 28.3162 Liter
Liter	= 0.2642 gal. (U.S.)	Gal.	= 3.7853 Liters
Liter	= 0.0284 bu. (U.S.)	Bu.	= 35.2383 Liters

Liter ..... = 100.027 cu. cm.
1.0567 qt. (liquid) or 0.9081 qt. (dry)
2.2046 lb. of pure water at 4° C = 1 kg.

Weight

Gram (g)	= 15.4324 grains	Grain	= 0.0648 g.
Gram	= 0.0353 oz.	Oz.	= 28.3495 g.
Kilogram	= 2.2046 lb.	Lb.	= 0.4536 kg.
Kilogram	= 0.0011 ton (sht.)	Ton (sht.)	= 907.1848 kg.
Ton (met.)	= 1.1023 ton (sht.)	Ton (sht.)	= 0.9072 ton (met.)
Ton (met.)	= 0.9842 ton (lg.)	Ton (lg.)	= 1.0160 ton (met.)

Pressure

1 kg. per sq. cm. ..... = 14.223 lb. per sq. in.
1 lb. per sq. in. ..... = 0.0703 kg. per sq. cm.
1 kg. per sq. m. ..... = 0.2048 lb. per sq. ft.
1 lb. per sq. ft. ..... = 4.8824 kg. per sq. m.
1 kg. per sq. cm. ..... = 0.9678 normal atmosphere

1 normal atmosphere ... = 1.0332 kg. per sq. cm.
1.0133 bars
14.696 lb. per sq. in.
29.92 inches of mercury

Torque

Foot Pound .... = 1.36 Newton-meters (N-m)
Inch Pound ..... = 0.11 Newton-meters

Temperature

Degrees Fahrenheit .... = Degrees Celsius (C) x 9/5 +32
Degress Celsius (C) ..... = Degrees Fahrenheit -32 x 5/9

1975 CADILLAC
VACUUM CIRCUIT DIAGRAM

THIS DIAGRAM INCLUDES ALL VACUUM OPERATED
STANDARD AND OPTIONAL EQUIPMENT

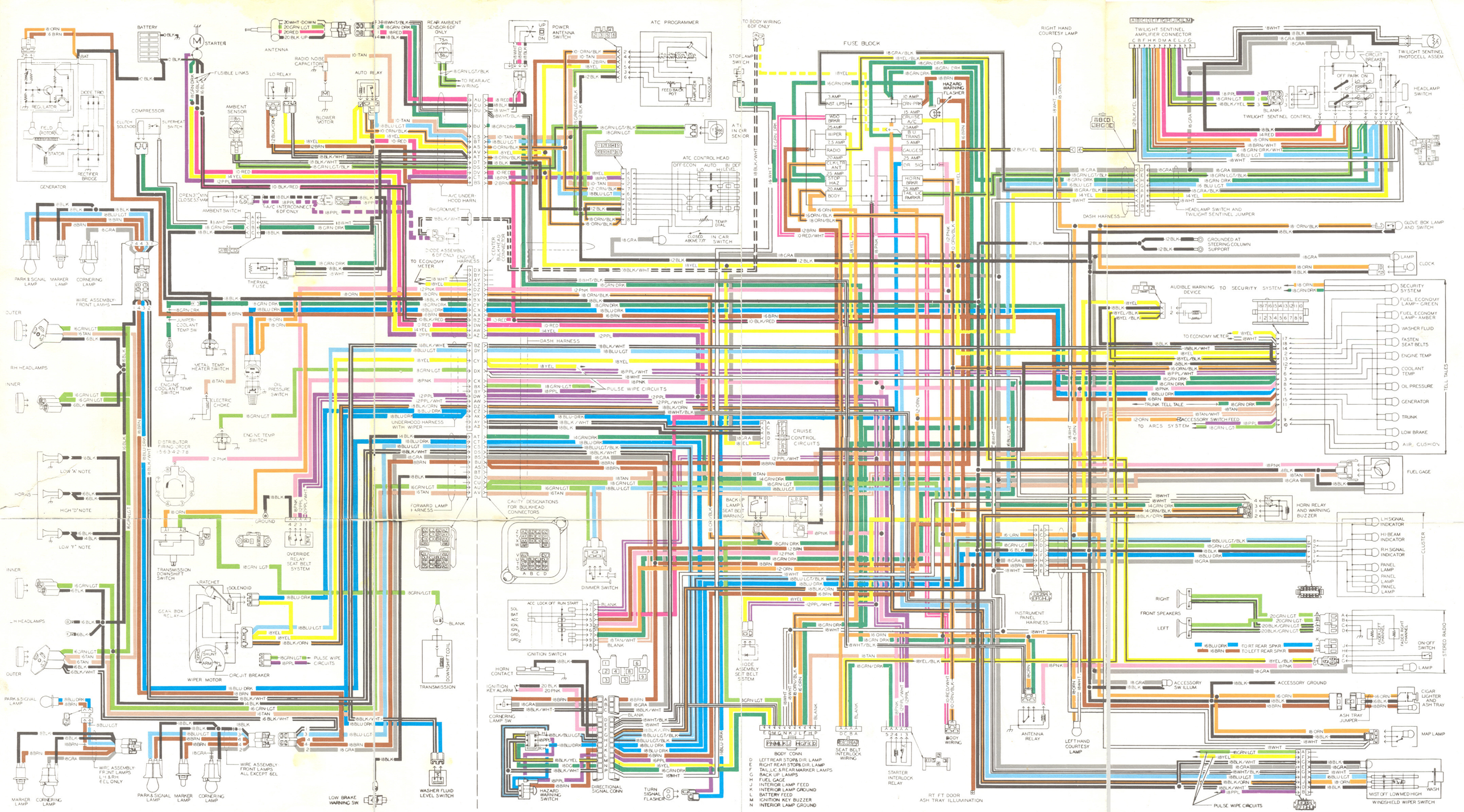
CADILLAC MOTOR CAR DIVISION — SERVICE DEPARTMENT

VAPOR CANISTER
BLACK
STEEL TUBING
CANISTER PURGE HOSE
CARB BOWL VENT
BLACK
TO FUEL TANK
SOLENOID VALVE
BLACK
CHECK VALVE
TRACK MASTER CONTROLLER
BLACK
CRUISE CONTROL TRANSDUCER
BLACK
BLACK
RESTRICTION
BLACK
STEEL TUBING
TRACK-MASTER ONLY
BLACK
CRUISE CONTROL SERVO
MANIFOLD FITTING
BLACK
CHECK VALVE
POWER BRAKE UNIT
BLACK
FUEL ECONOMY SWITCH
TURBO HYDRA-MATIC VACUUM MODULATOR
STEEL TUBING
VACUUM STORAGE TANK (TRAILER TOW ONLY)
EXHAUST PRESSURE TRANSDUCER (CALIFORNIA ONLY)
HEATER WATER VALVE
WHITE
COWL
COWL
COWL
RED
REDUCER
GREEN
NEUTRAL SWITCH
PARKING BRAKE RELEASE VACUUM DIAPHRAGM
BLACK
DEFROSTER DOOR ACTUATOR
LOWER MODE DOOR ACTUATOR
PURPLE
UPPER MODE DOOR ACTUATOR
RECIRCULATING AIR ACTUATOR
DELAY RESTRICTION
GREEN (BLACK "75" ONLY)
BLACK
REAR A/C SYSTEM FLEETWOOD SEVENTY-FIVE ONLY
CONNECTOR
BLACK
TAN
YELLOW
DK. BLUE
PURPLE
WHITE
YELLOW
VACUUM MOTOR
GREEN
WHITE
ORANGE
CONTROL HEAD VACUUM VALVE
VACUUM RELAY
BLACK
BLACK
PURPLE
VACUUM VALVE
CHARTREUSE
DK. BROWN
PURPLE
RED
TRANSDUCER
PROGRAMMER
PURPLE
RED
DK. BROWN
CHARTREUSE
CRUISE CONTROL VACUUM RELEASE VALVE

FLEETWOOD SEVENTY-FIVE REAR AIR CONDITIONING SYSTEM

REAR UNIT VACUUM CONTROL SWITCH
BLACK
BLACK
YELLOW
CHECK VALVE
CHECK VALVE (IN LINE)
A/C STORAGE TANK
BLACK
A/C HEATER MODE VACUUM POWER UNIT
PURPLE
TAN
RED
YELLOW
BLACK
POWER SERVO
TRANSDUCER
MASTER ON-OFF SWITCH
LEAKAGE PLUG
WATER CONTROL VALVE
PURPLE
PURPLE
YELLOW
THERMO VACUUM VALVE
CONNECTORS
A/C HEATER MODE VACUUM POWER UNIT
TAN
YELLOW
TAN
RED
PURPLE
YELLOW
TAN
TAN

VACUUM CIRCUIT DIAGRAM – ALL MODELS



1975 CHASSIS CIRCUIT WIRING DIAGRAM — ALL SERIES

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